Within-Individual Increases in Innovative Behavior and Creative, Persuasion, and Change Self-Efficacy Over Time: A Social–Cognitive Theory Perspective

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Studies of innovative behavior (the generation, dissemination, and implementation of new ideas) have generally overlooked the agency perspective on this important type of performance behavior. Guided by social–cognitive theory, we propose a moderated mediation relationship to explain why and how employees become motivated to make things happen through their innovative endeavors. First, we propose that within-individual increases in organizational trust and perceived respect by colleagues promote within-individual increases in creative, persuasion, and change self-efficacy over time. Second, we propose that within-individual increases in self-efficacy beliefs promote within-individual increases in idea generation, dissemination, and implementation over time. Finally, we propose that psychological collectivism weakens the positive relationship between within-individual increases in self-efficacy beliefs and within-individual increases in innovative behavior. Repeated measures collected from 267 employees in Italy at 3 time points over an 8-month period generally support our proposed dynamic moderated mediation relationship.

Keywords: innovative behavior, self-efficacy, social–cognitive theory, trust, respect

Organizations today strive for high degrees of not only productivity and service excellence but also innovation (Greve & Taylor, 2000; Han, Kim, & Srivastava, 1998). Researchers have thus increasingly examined the factors that promote idea generation and those that encourage idea dissemination and implementation (Axtell et al., 2000; Ng, Feldman, & Lam, 2010; Yuan & Woodman, 2010). Innovative behavior has also become a core component of employee performance evaluations (Gong, Huang, & Farh, 2009; Welbourne, Johnson, & Erez, 1998) and is thus an important construct that deserves more attention in its own right.

Despite the importance of innovative behavior, it is not necessarily easy to promote it in the workplace. Employees may believe that their ideas do not matter, will not be well received by others, and/or cannot be successfully implemented in practice (Bauer, 2012). To engage in innovative behavior, employees must possess a strong sense of agency (a desire to intentionally make things happen through their own actions; Bandura, 2001). Although research on employee creativity has shown that stronger beliefs in one’s ability to generate ideas are associated with greater creativity (Gong et al., 2009; Tierney & Farmer, 2002), whether and how a sense of agency affects different types of innovative behavior remains largely unaddressed.

Social–cognitive theory is particularly relevant to this topic. Grounded in the agentic perspective (Bandura, 2001), social–cognitive theory suggests that individuals hold beliefs about their ability to make things happen through their own actions (also known as self-efficacy). Three tenets pertinent to self-efficacy beliefs posited in this theory guide us in developing a theoretical model to explain why (and by what mechanism) individuals become increasingly motivated to engage in innovative behavior over time. These three tenets have not been tested before in the innovative behavior literature. Figure 1 depicts the proposed model.

First, social–cognitive theory suggests that self-efficacy beliefs determine behavioral intensity, particularly when the domains of those beliefs and the type of behavior in question are in accordance (Bandura, 2012). Although research has shown creative self-efficacy to be related to idea generation (Gong et al., 2009; Tierney & Farmer, 2002), innovative behavior may require more than creative self-efficacy alone, as it involves idea dissemination and implementation in addition to idea generation. For instance, Sternberg (2001) posits that creativity adds more value when the individuals who generate new ideas can also persuade others of the utility of those ideas and convince others to implement them. We thus propose that whereas growth in creative self-efficacy is a precursor to increased idea generation, growth in persuasion and change self-efficacy are precursors to increased idea dissemination and implementation, respectively.

Second, social–cognitive theory posits that individuals who experience increases in anxiety and fear are unlikely to experience growth in self-efficacy because negative emotions signal to them that they are vulnerable to poor performance (Bandura, 1977,
Accordingly, Bandura suggests that one way to build self-efficacy is to help people overcome their anxiety and fear. This tenet leads us to expect that increases in factors that lower employees’ anxiety and fear associated with attempts at innovation should cultivate growth in self-efficacy beliefs about their innovative capacity. Two such factors are trust and respect; for instance, Edmondson (1999) suggests that both trust and respect create a psychologically safe environment that enables employees to speak up. We argue that when employees have increasing trust in their organizations, they feel increasingly confident about promoting innovation because they believe that their organizations will value, rather than reject, such attempts. Similarly, when employees feel increasingly respected by their colleagues, they anticipate less rejection or criticism and are thus less likely to experience anxiety and fear that might stifle their confidence in engaging in innovative endeavors. To examine these conjectures, we investigate increases in organizational trust and perceived respect as antecedents of increases in self-efficacy beliefs.

Third, social–cognitive theory considers how a collectivistic orientation may affect the relationship between self-efficacy and agentic behavior. Bandura (2001) emphasizes that personal agency operates within the broader network of sociostructural influences. He notes that, contrary to the popular belief that enhanced self-efficacy (and increased engagement in agentic behavior) is indicative of an individualistic orientation, a collectivistic orientation is not necessarily agonistic to the need to feel agentic. For instance, individuals with enhanced self-efficacy beliefs may increase their performance to serve broader collective goals if they believe that those collective goals are personally important. Bandura’s observation suggests that one’s collectivistic orientation is likely to affect the efficacy–behavior relationship. To examine this issue, we investigate psychological collectivism as a between-individual moderator in the relationship between the within-individual increases in self-efficacy beliefs and the within-individual increases in innovative behavior.

Finally, we largely examine the aforementioned moderated mediation relationship from a within-individual change perspective (except when we examine the between-individual variable of psychological collectivism as a moderator). Ployhart and Vandenberg (2010) question whether most of the theories underlying the disciplines within the organizational sciences have ever been truly tested, given that to do so would mean examining actual change in the focal variables, which in turn means using a longitudinal research design. (p. 96).

They urge researchers to collect repeated measures over time from the same individuals and analyze the trajectory of changes in those observations, as “developing theories of dynamic relationships represents one of the next evolutions of management scholarship” (p. 98). Pitaru and Ployhart (2010) also call for more studies to investigate the mediation effects from a change perspective. These authors call such a design dynamic mediated relationships and argue that it is a much more rigorous approach to testing mediations and theories. Although our research design largely follows these scholars’ suggestions, we necessarily draw on some evidence gathered from between-individual research studies in our arguments. For the sake of simplicity, our theoretical focus in the rest of this article remains consistently on increases in the study variables over time. However, that perspective can be easily reversed to reflect decreases over time.

**Criterion Variable of Innovative Behavior**

Welbourne et al. (1998) suggest that the innovator role is at the core of organizational adaptability and should thus be included as a criterion in employee performance evaluations. They see it as distinct from the other four core work roles an employee typically assumes, including the roles of the worker, organizational citizen, team player, and career achiever. Janssen (2000) further asserts that innovative behavior has longer term effects that improve the functioning of an organization and generate social-psychological benefits for individual employees in the long run. Janssen highlights three important types of innovative behavior: (a) generating new ideas, (b) disseminating one’s own ideas and those of others throughout the organization, and (c) working to implement one’s own ideas and those of others.

Although generating, spreading, and implementing ideas together constitutes a meaningful aggregate construct (Axtell et al., 2000; De Jong & den Hartog, 2010; Zhou & George, 2001), the three types of innovative behavior are distinct from one another. It is even possible for an employee to engage in only one or two
types of behavior. For instance, although a senior engineer is expected to come up with new ideas regularly, he may be less expected to be involved in implementing those ideas, which is often a matter for junior counterparts. As such, determining which types of innovative behavior are more salient in a particular work context is important (Parker, Williams, & Turner, 2006). In other scenarios (such as that considered here), the sample under study may be diverse in nature and include employees who fulfill a range of work roles, thus making it more difficult to pinpoint the most important types of innovative behavior. In such cases, it is reasonable to examine the three types of innovative behavior separately. We also adopt this strategy.

Social-Cognitive Theory Perspective on Innovative Behavior

According to Bandura (2001, 2006), an agentic individual intentionally makes things happen through his or her actions. Agentic behavior is thus preceded by intentionality and forethought. Because social–cognitive theory (Bandura, 1977, 1997, 2001) addresses the cognitive beliefs underlying agentic behavior, it offers a particularly suitable theoretical lens through which to examine innovative behavior, which also involves an intentional change to the external environment. Janssen (2004) emphasizes that innovative behavior involves the intentional creation, introduction, and application of new ideas, highlighting the fit between social–cognitive theory and innovative behavior research.

Social–cognitive theory posits that self-efficacy is the key to determining whether an individual can successfully shape the reality in the way he or she wants. Self-efficacy comprises beliefs in one’s capacities to organize and execute the courses of action required to manage prospective situations (Bandura, 1995). It represents one’s perceived competence, one’s conviction that he or she can execute the action required to reach a goal, and an optimistic assessment of one’s likelihood of success (Gist, 1987; Hughes, Galbraith, & White, 2011). Bandura (2012) emphasizes that self-efficacy beliefs vary across activity domains and situational conditions and do not manifest uniformly across contexts. Because the dependent variables used in this study are innovative types of behavior from three domains (idea generation, dissemination, and implementation), we consistently focus on domain-specific self-efficacy (beliefs across different situations within the same domain) rather than general (beliefs across domains and situations), situation-specific (beliefs within one particular situation), and state (transient beliefs during a situation) self-efficacy. Empirical studies from different disciplines have converged in showing that domain-specific self-efficacy is susceptible to change (decreases or increases) over time (e.g., Beck & Schmidt, 2012; Chiou & Wan, 2007; Tierney & Farmer, 2011; van Beuningen, De Ruyter, & Wetzel, 2011).

Domain-Specific Self-Efficacy and Innovative Behavior

Bandura (2012) emphasizes that individuals exert an influence through different types of agency rooted in corresponding types of self-efficacy beliefs. This supposition resonates with expectancy theory, which suggests that individuals become increasingly motivated to exert effort when they have an increasing perception that such effort is likely to lead to successful performance or rewards (Vroom, 1964). Individuals with increased self-efficacy beliefs related to different domains of their innovative capacity are increasingly likely to engage in innovative behavior that complements those beliefs. For example, social–cognitive theory would suggest that individuals who experience growth in creative self-efficacy, which is the self-view that one has the ability to produce novel ideas (Tierney & Farmer, 2002), are increasingly likely to engage in ideation behavior and persist in the face of setbacks (Gist & Mitchell, 1992; Sadri & Robertson, 1993). Indeed, between-individual research has discovered a relationship between creative self-efficacy and idea generation (e.g., Gong et al., 2009; Liao, Liu, & Loi, 2010).

Persuasion self-efficacy is the extent to which employees are confident in their ability to convince others to accept and adopt their (or others’) new ideas. After developing or hearing about a new idea, employees must spread that idea to their colleagues and convince them of its value. The aim of this persuasion process is to increase others’ acceptance of an idea (Jaccard, 1981). Persuasion that involves the use of arguments or evidence in favor of an issue has been generally successful at changing the attitudes of intended targets (Greenwald, 1965; Staub, 1972). Via their between-individual research design, Yukl, Kim, and Chavez (1999) find that people who are able to make the case to targets that a proposed action is important and feasible are more successful at increasing the targets’ commitment to the action. However, persuading others to accept one’s opinions and suggestions is not necessarily easy (Bednar & Parker, 1969) and requires the communicator to be confident (Petty, Brinol, & Tormala, 2002). To become increasingly persuasive, employees must thus experience growth in their persuasion self-efficacy.

Change self-efficacy refers to an individual’s perceived ability to handle change in the workplace and to function well on the job despite the demands of that change (Vanbeuningen, 2000). This construct has been examined in studies of organizational changes (e.g., Fugate, Prussia, & Kinicki, 2012; Vardaman, Amis, Dyson, Wright, & Randolph, 2012). Change self-efficacy is relevant here, because having increased confidence in one’s capacity to change is likely to promote increased idea implementation, which often involves making incremental or even substantial changes to established work practices, norms, and routines. In the process of implementing novel ideas (such as experimenting with a new work method), innovators may encounter many ambiguous situations that create discomfort and distress (Janssen, 2004). Individuals who experience increases in change self-efficacy are increasingly able and motivated to overcome the negative feelings associated with such situations. Indeed, much of the between-individual research has found that employees’ favorable attitudes toward change or receptivity to change are positively related to their behavioral adoption (i.e., implementation) of technological innovation (Cocuerderoy, Guilmot, & Vas, 2014; Minsky & Marin, 1999; Neves, 2009).

In addition, in the idea-implementation stage, innovators may encounter resistance from some individuals, as implementing new ideas means changing the established ways of doing things at work (Herold, Fedor, & Caldwell, 2007; van Dam, Oreg, & Schyns, 2008). Although some individuals may be excited about implementing proposed innovations, others may be hesitant or even resistant. Baer (2012) observes that “given their potential to elicit controversy and to alter the dynamics in an organization, creative
ideas, compared with ideas that are more mundane, are naturally disadvantaged in harvesting the resources (funds, materials, etc.) necessary for their implementation” (p. 1105). Thus, when implementing new ideas, innovators must be able to handle transitions/changes skillfully. They must set the direction of change for those who are resistant, gain and reinforce others’ commitment, and overcome any obstacles to the change (Paglis & Green, 2002). As Bandura (1995) observes, “social reformers strongly believe that they can mobilize the collective effort needed to bring social change” (p. 13). Thus, feeling increasingly confident in one’s ability to handle change appears to be the core driver of increased idea implementation.

In brief, because the implementation of innovations requires individuals to cope with changes in the workplace (Baer, 2012), we expect increases in change self-efficacy to be positively associated with increases in idea-implementation behavior. In indirect support of this prediction, researchers have observed (in between-individual research designs) that change self-efficacy is positively related to one’s ability to successfully cope with changes at work, including readiness for (Cunningham et al., 2002), acceptance of (Vanberg & Banas, 2000), and commitment to (Herold et al., 2007) organizational change, and the perception that such change is controllable (Vardaman et al., 2012). The foregoing discussion of the three types of domain-specific self-efficacy leads us to make the following hypotheses:

**Hypothesis 1a:** Within-individual increases in creative self-efficacy are positively related to within-individual increases in idea generation.

**Hypothesis 1b:** Within-individual increases in persuasion self-efficacy are positively related to within-individual increases in idea dissemination.

**Hypothesis 1c:** Within-individual increases in change self-efficacy are positively related to within-individual increases in idea implementation.

### Development of Self-Efficacy Through Trust and Respect

Bandura (1977, 1997) identifies four major sources of self-efficacy: mastery experience, vicarious learning, social persuasion, and overcoming emotional barriers. Overcoming emotional barriers entails the reduction of negative emotions that stifle the growth of self-efficacy beliefs. Specifically, emotional arousal conveys information that is instrumental for the construction or destruction of domain-specific self-efficacy. As Bandura (1977) has pointed out, “Because high arousal usually debilitates performance, individuals are more likely to expect success when they are not beset by aversive arousal than if they are tense and viscerally agitated” (Bandura, 1977, p. 198). That is, a positive mood enhances the growth of self-efficacy beliefs, whereas a negative mood reduces such beliefs (Kavanagh & Bower, 1985). Accordingly, to stimulate the growth of self-efficacy beliefs about one’s innovative capacity, it is important that the work environment facilitates the removal of anxiety and fear associated with promoting innovation. Similarly, Edmondson (1999) asserts that employees are willing to speak up when they become confident that others will not embarrass, reject, or punish them for doing so, noting that such confidence stems from feelings of trust and respect in the workplace.

**Organizational trust.** Organizational trust refers to employees’ positive expectations of an organization’s behavior (Lewicki, McAllister, & Bies, 1998). Such positive expectations reflect the belief that the organization is benevolent and competent (Price & Malhotra, 2011). Employees with increasing levels of trust in an organization are increasingly willing to rely on the organization despite the risk that it may not follow through on its obligations and promises (Colquitt, Scott, & LePine, 2007; Mayer & Davis, 1999; Mayer, Davis, & Schoorman, 1995). Thus, the willingness to make oneself vulnerable to organizational actions is a core element of organizational trust (Dirks & Ferrin, 2001; McAllister, 1995).

Organizational trust is likely to aid the development of self-efficacy beliefs. Individuals assess their work environments to gauge whether it is safe to engage in innovative endeavors, as they risk being seen as troublemakers disturbing the status quo (Detert & Burris, 2007; LePine & Van Dyne, 1998; Milikkien, Morrison, & Hewlin, 2003). When individuals feel increasingly anxious and fearful because they are unsure whether their organization welcomes or values attempts at innovation, they are unlikely to experience growth in self-efficacy beliefs about their innovative capacity. Thus, to remove those aversive emotions that stifle the growth of self-efficacy beliefs, an overall sense of trust in an organization is required. Indeed, researchers argue that increases in organizational trust are associated with increases in employees’ willingness to carry risk within the organization (Mayer et al., 1995). For instance, between-individual research has shown that trust is related to the removal of psychological barriers that may limit performance, such as the delegation of crucial tasks to others, full disclosure of information, and rejection of safeguards (Colquitt et al., 2007). When organizational trust grows, employees feel increasingly safe to participate in attempts at innovation, thereby promoting the growth of domain-specific self-efficacy beliefs.

**Hypothesis 2:** Within-individual increases in organizational trust are positively related to within-individual increases in creative (H2a), persuasion (H2b), and change (H2c) self-efficacy.

**Perceived respect.** Another way to reduce the anxiety and fear associated with attempts at innovation is to promote perceived respect, which is an employee’s assessment of the degree to which he is accepted, appreciated, and valued as a member of his organization (Boezeman & Ellemers, 2007). Large-scale surveys have shown that employees place a high priority on interpersonal respect in the workplace (van Quaquebeke, Zemner, & Eckloff, 2009). Those who feel increasingly respected are likely to perceive themselves as having an elevated social status (Buttel, Wrzesniewski, & Wiesenfeld, 2012). Unsurprisingly, researchers have observed in between-individual studies that a positive reputation among one’s peers is associated with a positive self-concept and better task performance (Gest, Rulison, Davidson, & Welsh, 2008).

Being increasingly respected promotes the growth of self-efficacy beliefs over time because it signals that one should expect success in one’s attempts at innovation, which helps to overcome the emotional barriers to self-efficacy construction. For instance, high-quality relationships facilitate the growth of a “can-do” atti-
tude (Liao et al., 2010; Zhang & Zhou, 2014). In addition, a communicator’s likability and credibility have been found to be important determinants of his or her success in persuasion (Beutler, Johnson, Neville, Elkins, & Jobe, 1975; Chaiken & Eagly, 1983). Consequently, increases in perceived respect signal to employees that they can make increased attempts at innovation without having to worry that these attempts might upset their supervisors and coworkers (Fuller et al., 2006). Colleagues may even expect respected employees to display more innovative behavior. This expectation, in turn, creates a psychologically safe environment for innovation. Using a within-individual research design, Tierney and Farmer (2011) find that increases in others’ expectations of creativity are positively related to increases in creative self-efficacy. In summary, when perceived respect grows, employees experience reduced anxiety about engaging in innovative behavior, thereby promoting the growth of their domain-specific self-efficacy beliefs.

Hypothesis 3: Within-individual increases in perceived respect are positively related to within-individual increases in creative (H3a), persuasion (H3b), and change (H3c) self-efficacy.

Moderating Effects of Psychological Collectivism

Bandura (2012) emphasizes that social–cognitive theory does not allege an invariant effect of self-efficacy. He acknowledges that one does not necessarily always have direct control over external conditions and may need to look more broadly at the social environment to identify the most effective behavior in a situation. Thus, it is inappropriate to contrast self-efficacy with communal attachments and civic responsibility because

A sense of efficacy does not necessarily exalt the self or spawn an individualistic lifestyle, identity, or morality that slights collective welfare. . . . If belief in the power to produce results is put in the service of relational goals and beneficial social purposes, it fosters a communal life rather than eroding it. (Bandura, 2001, p. 15)

In other words, Bandura suggests that the influences of self-efficacy on one’s behavior depend on one’s collective orientation. Although collectivism has been extensively studied at the cultural level, researchers have only just begun to examine psychological collectivism. A person with a high level of psychological collectivism is strongly attracted to social groups, supports the collective’s goals, and accepts social norms (Dierdorff, Bell, & Belohlav, 2011; Hui, Cheng, & Gan, 2003; Jackson, Colquitt, Wesson, & Zapata-Phelan, 2006; Love & Dustin, 2014). In contrast to their individualistic-oriented counterparts, who tend to hold an independent self-concept, collectivistic-oriented individuals tend to hold an interdependent self-concept (Breuer & Chen, 2007). For instance, between-individual research evidence has shown that individuals who exhibit greater psychological collectivistic tendencies report a greater person–organization value fit (Astakhova, Doty, & Hang, 2014) and that person–organization value and person–group fit have a stronger influence on collectivists than on individualists (Oh et al., 2014; Ramesh & Gelfand, 2010). It is important to note that the between-individual variability in psychological collectivism has typically been attributed to stable individual differences (Jackson et al., 2006).

On the one hand, it can be argued that increases in domain-specific self-efficacy beliefs are likely to have a weaker influence on increases in the three types of innovative behavior for individuals with stronger psychological collectivistic tendencies. First, collectivistic employees are more likely to refer to the preferences of others when allocating time and energy at work (Earley, 1989; Earley & Gibson, 1998; Mortazavi, Pedhiwala, Shafiro, & Hammer, 2009) because they believe social norms and the expectations of others to be more important than individual preferences (Dierdorff et al., 2011; Wheeler, Reis, & Bond, 1989). Thus, changes in collectivistic employees’ engagement in innovative behavior are more likely to be determined by the strength of the perceived social norms surrounding such behavior (e.g., the expectations of supervisors and peers) than by changes in their own domain-specific self-efficacy.

Second, collectivistic employees have a stronger desire to feel attached to a large collective (Breuer & Chen, 2007; Earley, 1993). Consequently, they are more likely than their individualistic counterparts to be concerned that innovative behavior may upset the status quo and strain current social relationships. Oyserman, Coon, and Kemmelmeier (2002) note that an important consequence of collectivism is the restraint of the open and direct expression of personal feelings, as such feelings are perceived to be potentially threatening to in-group harmony. Goncalo and Staw (2006) also argue that collectivists are more likely to feel the pressure to conform, which stifles creativity. Extending this logic to our moderating-effects argument, collectivists’ enhanced self-efficacy beliefs may have only a limited influence on their increases in innovative behavior because they may perceive the proposal of new work practices as forcing others to accept a new way to allocate resources. In other words, even if collectivists feel increasingly confident in their ability to engage in such behavior, their empathetic concern for others (Sullivan, Landau, Kay, & Rothschild, 2012) may be a disincentive to doing so.

On the other hand, it can also be argued that increases in domain-specific self-efficacy beliefs are likely to have a stronger relationship with increases in the three types of innovative behavior for individuals with stronger psychological collectivistic tendencies. Collectivists who experience increases in self-efficacy beliefs may be especially capable of innovating on behalf of their organizations and motivated to do so because they are increasingly confident in their innovative ability and the collective goal of organizational success is important to them (Eisenberg, 1999). Although both arguments are feasible, we propose a discordant rather than concordant interaction effect, as such an effect is more consistent with the empirical evidence. For instance, Goncalo and Staw (2006) originally posit that because collectivists are more responsive to social norms and expectations, they will be more creative when given explicit instructions to be creative. However, they find that individualists given the same instructions are more creative than their collectivist counterparts. Via a between-individual research design, Wennberg, Pathak, and Autio (2013) find that entrepreneurs’ self-efficacy exerts stronger effects on their entrepreneurial behavior when they endorse individualistic values more strongly. Thus, we make the following prediction:

Hypothesis 4: The between-individual variable of psychological collectivism moderates the relationships between within-individual increases in creative (H4a), persuasion (H4b), and change (H4c) self-efficacy and within-individual increases in innovative behavior in such a way that the relationships are
weaker for employees with a high (vs. low) level of psychological collectivism.

Method

Research Design

We collected repeated measures from employees in 60 organizations in Italy at three time points over an 8-month period. This longitudinal design matched our hypotheses, focusing on changes over time. We adopted an 8-month study period based on Tierney and Farmer’s (2011) argument that 6 months (or more) should be sufficient for observing meaningful changes in creative self-efficacy. We expect the same to hold true for persuasion and change self-efficacy. At Time 1, we contacted the managers of 60 organizations in the authors’ personal networks and invited them to distribute surveys to their employees. The managers were eager to learn how to promote innovation in their organizations. The 60 participating organizations operated in several industries, including manufacturing, banking and finance, information technology, and the nonprofit sector. Four months later (Time 2), we sent surveys to the respondents who completed the first survey. Eight months after the first data collection (Time 3), we sent the third survey to the respondents who completed the second survey. In addition to the study variables, we also collected data (across the three waves of surveys) on other variables that are not of interest to this study. That is, this study is part of a larger data collection process.

Sample

At Time 1, 350 employees were invited to participate, 303 of whom agreed and completed surveys (response rate = 87%). We then sent the Time 2 survey to all 303 employees. However, those who had changed organizations in the interim were eventually excluded from further participation, as they would have used different employers as referents in their survey responses. After these exclusions, we received 281 usable surveys at Time 2 for a response rate of 93%. Finally, we sent the Time 3 survey to the 281 respondents who had participated in both previous surveys with the aforementioned exclusion criterion again applied. We received 267 usable surveys, representing a 95% response rate at Time 3. The high response rate for all three of the survey waves was attributable to the salience of the topic to the organizations and thus to the managers’ strong encouragement to participate (Roth & BeVier, 1998).

We then matched the three waves of data and screened them for unusual response patterns (e.g., giving the same responses to all of the items), and found no such patterns. We also compared the individuals who participated in all three of the surveys with the individuals who withdrew at some point during the 8-month study period. We found no significant differences in demographic variables between the respondents and nonrespondents.

The respondents were 39.2 years old on average (range = 20 to 66, SD = 10.4). In addition, 38% were women, 55% were married, and 73% were high school graduates, with the remaining 23% holding college degrees or more advanced qualifications. The average organizational tenure was 10.8 years and the average job tenure was 9.2 years. Furthermore, 97% of the respondents identified themselves as nonmanagers and 3% identified themselves as managers.

Measures

The respondents were instructed to evaluate the survey items on 5-point Likert-type scales ranging from 1 (strongly disagree) to 5 (strongly agree). The items were translated into Italian (Brislin, 1980). Table 1 shows the means, standard deviations, reliability estimates, and correlations between the variables. All of the measures are provided in the Appendix.

We measured the first independent variable, organizational trust, at the three time points using Robinson and Rousseau’s (1994) seven-item scale. We measured the second independent variable, perceived respect, at the three time points with seven items adapted from Smith and Tyler’s (1997) scale. These items indicated the respondents’ overall perceptions of respect from their colleagues, including their supervisors and coworkers.

We measured the first mediator, creative self-efficacy, at the three time points using three items developed by Tierney and Farmer (2002). We measured the second mediator, persuasion self-efficacy, at the three time points according to a five-item scale adapted from studies by van Veenen (1999) and Lam, Chen, and Schaubroeck (2002). Finally, we measured the third mediator, change self-efficacy, at the three time points using five items adapted from studies by Vanberg and Banas (2000) and Judge, Thoresen, Pucik, and Welbourne (1999).

We measured the moderator variable, psychological collectivism, only at Time 1 with eight items adapted from a study by Earley (1994). We measured the variable only once because we treated it as a between-individual variable rather than a psychological state that varied over time (Jackson et al., 2006). As all of the organizations (and respondents) were located in the same country (Italy), we expected that the observed individual differences in psychological collectivism would not be confounded by cultural-level differences in collectivism. Finally, we measured the three types of innovative behavior, the dependent variables in this study, at all three of the time points using the nine-item scale created by Janssen (2001). These items focused on innovative behavior rather than beliefs about one’s innovative capacity. To confirm this focus, we recruited 50 Italian undergraduate students to distinguish the self-efficacy belief items from the corresponding innovative behavior items. We observed a 90% accuracy rate in making the distinction, which increased our confidence that the two sets of constructs (self-efficacy beliefs vs. innovative behavior) were perceived to be different, as intended.

We controlled for age, job tenure, organizational tenure (each measured in years), and job level (1 = nonmanagerial employee, 2 = first-line supervisor or middle manager, 3 = senior manager), because the respondents with a greater amount of work experience and more job responsibilities might have had more opportunities to generate ideas at work and promote those ideas to others. We also controlled for sex (0 = male, 1 = female) and education level (1 = some high school; 6 = postgraduate degree), because the male and more educated employees might have been more willing to engage in innovative behavior owing to their higher achievement orientation. In addition, we controlled for marital status (0 = single, divorced, or widowed, 1 = married or partnered), because the individuals without family might have had more psychological
Table 1
Means, Standard Deviations, and Correlations Among the Study Variables (N = 267)

| Variable         | Mean | SD  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  |
|------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| OT (Time 1)      | 3.36 | 0.99| (95)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| OT (Time 2)      | 3.32 | 0.86| (94)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| OT (Time 3)      | 3.28 | 0.87| (94)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| PR (Time 1)      | 3.62 | 0.67| (88)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| PR (Time 2)      | 3.56 | 0.66| (89)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| PR (Time 3)      | 3.60 | 0.66| (89)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| CRSE (Time 1)    | 3.59 | 0.69| (76)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| CRSE (Time 2)    | 3.48 | 0.74| (46)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| CRSE (Time 3)    | 3.51 | 0.68| (81)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| PSE (Time 1)     | 3.38 | 0.68| (78)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| PSE (Time 2)     | 3.28 | 0.61| (76)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| PSE (Time 3)     | 3.31 | 0.62| (81)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| CHSE (Time 1)    | 3.56 | 0.64| (80)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| CHSE (Time 2)    | 3.45 | 0.61| (80)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| CHSE (Time 3)    | 3.46 | 0.63| (83)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| IG (Time 1)      | 2.71 | 0.97| (79)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| IG (Time 2)      | 2.71 | 0.98| (85)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| IG (Time 3)      | 2.73 | 0.94| (85)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| ID (Time 1)      | 2.58 | 1.07| (.86)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| ID (Time 2)      | 2.47 | 0.99| (.86)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| ID (Time 3)      | 2.55 | 0.98| (.87)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| II (Time 1)      | 2.62 | 1.03| (.83)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| II (Time 2)      | 2.52 | 1.02| (.86)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| II (Time 3)      | 2.54 | 1.01| (.87)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| PCOL (Time 1)    | 3.33 | 0.87| (.89)|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

Note. Correlations are significant at $\alpha = .05$. Correlations are significant at $\alpha = .01$. OT = organizational trust; PR = perceived respect; CRSE = creative self-efficacy; PSE = persuasion self-efficacy; CHSE = change self-efficacy; IG = idea generation; ID = idea dissemination; II = idea implementation; PCOL = psychological collectivism.
resources to engage in innovative behavior. Finally, because 87 of the 267 respondents were from the same organization (the remaining 180 were from 59 different organizations), we created a dummy variable in which “1” designated those 87 respondents, and “0” designated the remaining 180 respondents. Including this variable removed any effects that the idiosyncratic characteristics of that single organization might have had on the data set.

Validity of the Self-Reported Measures of Innovative Behavior

Although such a methodology has been adopted before (Axtell et al., 2000; Ng et al., 2010; Parker et al., 2006), it is important to present both theoretical reasons and empirical evidence to justify the use of employees’ self-ratings of innovative behavior. First, employees themselves may be more aware of the subtleties of their innovative suggestions/behavior than others, and thus better able to judge whether their innovative endeavors are fundamentally or incrementally novel in the context of work. Janssen (2001) makes a similar argument that self-ratings of innovative behavior are useful because employees’ cognitive representation and reports of their own innovative behavior consider the idiosyncratic historical and contextual factors embedded in their own work activities. Second, non-self-reports of innovative behavior are often unavailable, in which case, self-reports are feasible alternatives (Shalley, Gilson, & Blum, 2009). For instance, as Janssen (2001) observes, self-ratings of innovative behavior are especially useful when there is reason to expect that supervisors may overlook genuine innovative activities and only capture those activities that are intended to impress the supervisors.

Third, there is evidence of convergent validity between self-ratings and supervisor ratings, and between self-ratings and objective measures. We have found that across six studies (N = 884) that provide both self- and supervisor-ratings of creativity or innovative behavior, the average observed correlation is .29 (with confidence intervals excluding zero). Regarding the convergence between self-ratings and objective measures, Ettle and O’Keefe (1982) observe that self-ratings of creativity are positively related (.16, p < .01) to an unobtrusive (word count) measure of creativity, whereas Jennings and Young (1990) observe that self-ratings of entrepreneurial innovation are positively related to archival records of product innovation at .73 (p < .01). In addition, several studies have shown that self-ratings converge with the scores assigned by external raters who are not organizational members. Amabile, Barsade, Mueller, and Staw (2005) argue that “this coder-rated measure of creative thinking . . . has a more objective basis than observers’ ratings” (p. 380). For instance, Binnewies, Ohly, and Sonnenlag (2007) find that employees’ self-rated idea dissemination behavior is positively related to coder-rated employees’ creative thoughts (.34, p < .05). Similarly, Parker et al. (2006) find that self-rated proactive change-oriented behavior is related to the ratings assigned by interviewers who separately assess respondents based on their responses to interview questions (.45, p < .01).

Fourth, to further validate the scales we used, we collected extra data from an independent sample of 50 supervisor–subordinate dyads in Italy. Both the subordinates and their supervisors were instructed to rate the subordinates’ innovative behavior. The subordinates’ self-ratings of their innovative behavior were highly convergent with their supervisors’ ratings. The correlation between the two sources was .75 (p < .01) for idea generation, .77 (p < .01) for idea dissemination, and .80 (p < .01) for idea implementation.

Fifth, we examined whether the self-reported measures of innovative behavior were influenced by the common method biases identified by Podsakoff, MacKenzie, Lee, and Podsakoff (2003), including impression management, trait affect, and acquiescence bias (the tendency to agree with survey items regardless of the item content). To that end, we collected self-reported measures from 200 Italian working adults through a marketing research organization. We used Blasberg, Rogers, and Paulhus’s (2014) 20-item scale to measure agentic impression management (exaggerating one’s social or intellectual status) and communal impression management (denying socially deviant impulses and claiming pious attributes), the Positive and Negative Affect Schedule (PANAS) 20-item scale (Watson, Clark, & Tellegen, 1988) to measure trait affect, and Winkler, Kanouse, and John’s (1982) method to assess acquiescence bias.

We observed that the relationships of the three self-efficacy beliefs with the corresponding three types of innovative behavior were not moderated by any of the aforementioned common method biases. The null results suggested that whether individuals had a high degree of impression management, trait positive and negative affect, and acquiescence bias did not affect the strength of the relationships between self-reported efficacy beliefs and self-reported innovative behavior. In addition, we specified self-efficacy beliefs as predictors of innovative behavior in structural equation modeling and controlled for the influences of these variables on the self-reported items of innovative behavior. Self-efficacy beliefs had significant positive effects on the corresponding innovative behavior, even after we controlled for those three sets of variables at the item level. Moreover, the partial correlations after controlling for the three sets of response biases were statistically significant: .35 (p < .01) for the relationship between creative self-efficacy and idea generation, .29 (p < .01) for the relationship between persuasion self-efficacy and idea dissemination, and .23 (p < .01) for the relationship between change self-efficacy and idea implementation.

Finally, we recontacted the respondents (N = 154) 2 months later and measured their self-esteem and narcissism. Although these two traits are not identified by Podsakoff et al. (2003) as response biases, individuals in whom the traits are strong might be overly optimistic in their ratings of self-efficacy beliefs and innovative behavior. We used Rosenberg’s (1989) 10-item scale to assess self-esteem, and Wales, Patel, and Lumpkin’s (2013) 15-item scale to assess narcissism. We found that (a) the two traits did not interact with self-efficacy beliefs to affect innovative behavior; (b) they did not change the pattern of findings after we controlled for their effects at the item level; and (c) the partial correlation after controlling for these two traits was .40 (p < .01) for the relationship between creative self-efficacy and idea generation, .27 (p < .05) for the relationship between persuasion self-efficacy and idea dissemination, and .23 (p < .05) for the relationship between change self-efficacy and idea implementation. In summary, based on the preceding reasons and evidence, we established some confidence that a person’s assessment of his or her own innovative behavior is not necessarily biased or contaminated.
Assessing the Psychometric Properties of Measures

To examine the psychometric properties of the scales we used, we specified all of the latent variables via confirmatory factor analysis (CFA) and assessed the model fit (Anderson & Gerbing, 1988). Each variable was specified as a latent construct represented by its corresponding scale items. We evaluated the model using the various fit indices recommended by Hu and Bentler (1998): the Tucker-Lewis index (TLI), Bollen’s Fit Index (BL89), the comparative fit index (CFI), the root mean squared error of approximation (RMSEA), and the standardized root mean squared residual (SRMR). According to Hu and Bentler (1999), a model fit is good if the TLI, BL89, and CFI are .95 or higher, the RMSEA is .06 or lower, and the SRMR is .08 or lower.

The overall measurement model (containing all of the scales used in the study) had an acceptable degree of fit. The chi-square value was 10,030.35 (df = 6,146), the TLI, BL89, and CFI were .96, the RMSEA was .04, and the SRMR was .06. Moreover, all of the factor loadings were statistically significant. These results suggest that the psychometric properties of our measurement scales were generally acceptable.

In addition, we examined whether the scales demonstrated measurement invariance longitudinally (Chan, 1998; Vandenberg & Lance, 2000). Chi-square difference tests showed only one item in the scale of organizational trust and one item in the scale of persuasion self-efficacy to have significantly different factor loadings at the three time points. For both theoretical and practical reasons, this partial scale invariance should not substantively affect the interpretation of our results. Theoretically, it would be overly stringent to expect full-scale invariances for all of the study variables in a longitudinal study when the underlying assumption holds that the variables change over time (Pentz & Chou, 1994). Methodologically, because we allowed factor loadings to be freely estimated in the subsequent latent growth modeling (LGM) analyses, the parameter estimates controlled for the lack of full metric invariance at the first-order factor level, which in turn defined the true change at the second-order factor level.

Assessing the Discriminant Validity of Measures

We assessed the empirical distinctiveness of the various constructs by alternately constraining a certain pairwise factor correlation to a value of 1 in the aforementioned CFA model, and then examining whether the model fit would be significantly worse in terms of a change in chi square (James, Mulaik, & Brett, 1982; Mallard & Lance, 1998). Using this analytical method, we found that (a) the three types of domain-specific self-efficacy were empirically distinct (p < .001 in each case), (b) the three types of innovative behavior were empirically distinct (p < .001 in each case), and (c) the three types of domain-specific self-efficacy beliefs and the three corresponding types of innovative behavior were empirically distinct (p < .001 in each case). This latter finding was also consistent with our findings from the undergraduate sample. The respondents were able to distinguish between the content of the two sets of items.

Assessing the Effects of Common Method Variance

Podsakoff et al. (2003) observe that the inclusion and specification of a latent common method variance factor is a useful approach for detecting common method variance. The results showed that specifying a common method factor underlying all of the measurement items at Time 1 did not dramatically change the significant factor loading patterns from those observed in the CFA model excluding that factor. All of the factor loadings were statistically significant and in the expected direction even after we controlled for the influence of the latent common method factor. We repeated these procedures for the data at Times 2 and 3, and found that all of the factor loadings remained significant after the inclusion of the common method factor. Common method variance did not seem to pose a serious threat to any survey wave. It is important to note that the intercorrelations between the three types of innovative behavior at each of the three time points were quite high (between .72 and .84), despite these three constructs being empirically distinct, as shown previously. However, such strong correlations between subdimensions of innovative behavior are not infrequently observed (Daniels, Wimalasiri, Cheyne, & Story, 2011; Holman et al., 2012), as together they represent a global behavior construct.

Data Analysis Strategies

We used a two-step approach to examine our dynamic moderated mediation hypotheses. The first step involved using LGM to estimate the rates of change over time for each survey construct. Because LGM is not designed to test moderated mediation effects, the second step involved using estimates of the changes in the multiple regression models to examine the moderated mediation effects.

LGM. In the first step, we used LGM to generate linear change estimates. LGM provides estimates of the latent intercept (representing the initial status of individuals on a measure) and slope (representing the rate of change over time on a measure) factors for each individual. We followed Duncan, Duncan, and Strycker’s (2006) approach to obtain these estimates. First, we set the loadings from the intercept factor of each of the first-order latent constructs (purportedly measured by the respective scale items) to 1 to ensure that it influenced all three equally. Second, we set the loadings from the slope factor of the three first-order latent constructs to values of 0, 1, and 2 to represent linear positive changes. Thus, consistent with our hypotheses, our subsequent analyses focused on how increases in one variable affected increases in another. (If the factor loadings had been fixed to values of 0, –1, and –2, we would have focused on how the decreases in one variable affected the decreases in another.)

We adopted a second-order-factor LGM approach in which the second-order latent intercept and slope factors were represented by the three first-order latent variables purportedly measured across the three time points (with the factor loadings set to 0, 1, and 2, as noted). The next step involved representing each first-order latent factor by its respective measurement items. We permitted correlations among the error variances of the measurement items used repeatedly across the time points. We also allowed all of the factor loadings to be freely estimated because, as previously noted, our scales did not demonstrate full measurement invariance across the three time points. Readers are referred to several additional studies for more technical details on the use of LGM: Bentein, Vandenberghe, Vandenberg, and Stinglhamber (2005); Bollen and Curran (2006); Chan (1998); Chan, Ramey, Ramey, and Schmitt (2000);
Chan and Schmitt (2000); Duncan et al. (2006); and Lance, Vandenberg, and Self (2000).

Multiple regression models. In the second step of analysis, we exported the estimates of the latent slope factors for use in the multiple regression models, which in turn allowed us to test our study hypotheses and assess the conditional indirect effects following the approach outlined by Preacher, Rucker, and Hayes (2007). To test Hypotheses 1a through 1c, we regressed the increases in each type of innovative behavior on the corresponding increases in self-efficacy belief and the sociodemographic variables. To test Hypotheses 2a through 2c and 3a through 3c, we regressed the increases in self-efficacy beliefs on the increases in both organizational trust and perceived respect along with the sociodemographic variables. To test Hypothesis 4a, we regressed the increases in idea generation (the dependent variable) on the increases in creative self-efficacy (the corresponding mediator), psychological collectivism (the moderator), and the interaction between increases in creative self-efficacy and psychological collectivism, along with the increases in organizational trust and perceived respect (the independent variables) and the sociodemographic variables as control variables. We then repeated these procedures using idea dissemination and persuasion self-efficacy (to test Hypothesis 4b) and idea implementation and change self-efficacy (to test Hypothesis 4c).

Results

A variance decomposition analysis (Shavelson, Webb, & Rowley, 1989) reveals that the proportion of variance attributable to between-individual differences versus within-individual changes (across all items and all three waves) is as follows: 54% versus 1% for organizational trust (the remaining proportion is attributed to the interaction of between- and within-individual variance and error residual), 34% versus 6% for perceived respect, 33% versus 8% for creative self-efficacy, 22% versus 12% for persuasion self-efficacy, 24% versus 16% for change self-efficacy, 40% versus 1% for idea generation, 39% versus 4% for idea dissemination, and 37% versus 6% for idea implementation. The much larger between-individual variance relative to the within-individual variance is consistent with observations in other longitudinal studies (Cranford et al., 2006; Sherry, Mackinnon, Macneil, & Fitzpatrick, 2013). In addition, although the variance attributable to within-individual change is not large in general, the variability in the increase rate is statistically significant ($p < .01$) for all variables, suggesting that researchers need to understand the factors (be they between- or within-individual factors) that explain this variability. The hypothesis testing results presented in this study help to explain how the within-individual increases in the study variables affect one another.

Examining the Main Effect Hypotheses

Tables 2 and 3 present the regression results for the main effects in our proposed moderated mediation relationships. Hypothesis 1 predicts that within-individual increases in creative self-efficacy are positively related to within-individual increases in idea generation (H1a), within-individual increases in persuasion self-efficacy to within-individual increases in idea dissemination (H1b), and within-individual increases in change self-efficacy to within-individual increases in idea implementation (H1c). Table 2 shows that all three subhypotheses are supported. The increases in creative self-efficacy are significantly and positively related to the increases in idea generation behavior ($\beta = .13$, $p < .05$), and the increases in persuasion and change self-efficacy are significantly and positively associated with the increases in idea dissemination.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Main Effects of the Increases in Different Types of Self-Efficacy on the Increases in Different Types of Innovative Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dependent variable</td>
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<tr>
<td></td>
<td>Increases in idea generation</td>
</tr>
<tr>
<td>Socio-demographic variables</td>
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<tr>
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<tr>
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<tr>
<td>$R^2$</td>
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</tr>
<tr>
<td>Main effects</td>
<td></td>
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<tr>
<td>Increases in creative self-efficacy</td>
<td>.13* (.08) (H1a)</td>
</tr>
<tr>
<td>Increases in persuasion self-efficacy</td>
<td>—</td>
</tr>
<tr>
<td>Increases in change self-efficacy</td>
<td>—</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>.02*</td>
</tr>
</tbody>
</table>

Note. The regression coefficients represent standardized parameters. The values in parentheses following the regression coefficients represent standard errors of the estimates. A dash (−) indicates that the variable was not included in the regression model. CHSE = change self-efficacy; CRSE = creative self-efficacy; H1a = Hypothesis 1a; H1b = Hypothesis 1b; H1c = Hypothesis 1c; PSE = persuasion self-efficacy. * $p < .05$. ** $p < .01$. 

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and implementation (β = .32, p < .01, and β = .22, p < .01), respectively.

Hypotheses 2 and 3 predict that the within-individual increases in organizational trust and perceived respect are positively related to the within-individual increases in creative (H2a, H3a), persuasion (H2b, H3b), and change (H2c, H3c) self-efficacy. As shown in Table 3, the increases in organizational trust are positively related to the increases in persuasion (β = .17, p < .01) and change (β = .21, p < .01) self-efficacy, even after controlling for the effects of increases in perceived respect and sociodemographic variables. However, increases in organizational trust are not significantly related to increases in creative self-efficacy (β = .10, ns). Thus, H2b and H2c are supported, but H2a is not. Table 3 also shows that the increases in perceived respect are positively related to the increases in creative (β = .25, p < .01), persuasion (β = .31, p < .01), and change (β = .18, p < .01) self-efficacy, even when we controlled for the effects of the increases in organizational trust and sociodemographic variables. Hence, H3a, H3b, and H3c are supported.

Examining the Moderation Effect Hypotheses

Hypothesis 4 predicts that the relationships between the within-individual increases in creative (H4a), persuasion (H4b), and change (H4c) self-efficacy and the within-individual increases in innovative behavior are weaker for individuals with a high (vs. low) level of psychological collectivism. We tested these predictions, and Table 4 presents the results. The interaction between the increases in persuasion self-efficacy and psychological collectivism is significantly and negatively associated with the increases in idea dissemination (β = −.33, p < .01). Furthermore, the interaction between the increases in change self-efficacy and psychological collectivism is significantly and negatively associated with the increases in idea implementation (β = −.11, p < .05). Figures 2 and 3 plot these interaction effects.

Table 3
Main Effects of the Increases in Both Organizational Trust and Perceived Respect on the Increases in Different Types of Self-Efficacy

<table>
<thead>
<tr>
<th>Sociodemographic variables</th>
<th>Increases in CRSE</th>
<th>Increases in PSE</th>
<th>Increases in CHSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
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<td>−.02 (.00)</td>
<td>−.08 (.00)</td>
</tr>
<tr>
<td>Female</td>
<td>.07 (.03)</td>
<td>.08 (.03)</td>
<td>.09 (.03)</td>
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<tr>
<td>Married</td>
<td>.08 (.04)</td>
<td>.02 (.03)</td>
<td>.01 (.04)</td>
</tr>
<tr>
<td>Education level</td>
<td>−.03 (.01)</td>
<td>.05 (.01)</td>
<td>.01 (.02)</td>
</tr>
<tr>
<td>Job tenure</td>
<td>−.06 (.00)</td>
<td>−.21* (.00)</td>
<td>−.03 (.00)</td>
</tr>
<tr>
<td>Organizational tenure</td>
<td>−.10 (.00)</td>
<td>.19 (.00)</td>
<td>.00 (.00)</td>
</tr>
<tr>
<td>Job level</td>
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<td>−.00 (.05)</td>
<td>.02 (.07)</td>
</tr>
<tr>
<td>Organizational membership</td>
<td>−.15* (.04)</td>
<td>.10 (.03)</td>
<td>−.01 (.04)</td>
</tr>
<tr>
<td>Main effects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increases in organizational trust</td>
<td>.10 (.05) (H2a)</td>
<td>.17** (.05) (H2b)</td>
<td>.21** (.06) (H2c)</td>
</tr>
<tr>
<td>Increases in perceived respect</td>
<td>.25** (.08) (H3a)</td>
<td>.31** (.06) (H3b)</td>
<td>.18** (.08) (H3c)</td>
</tr>
<tr>
<td>ΔR²</td>
<td>.08**</td>
<td>.15**</td>
<td>.09**</td>
</tr>
</tbody>
</table>

Note. The regression coefficients represent standardized parameters. The values in parentheses following the regression coefficients represent standard errors of the estimates. CHSE = change self-efficacy; CRSE = creative self-efficacy; PSE = persuasion self-efficacy.

Figure 2 shows that the positive relationship between the increases in persuasion self-efficacy and increases in idea dissemination is weaker for the employees who exhibit highly collectivistic tendencies (1 SD above the mean). Post hoc analyses reveal the significance of the positive relationship between the increases in persuasion self-efficacy and increases in idea dissemination to be significantly weaker (p < .01) for the highly collectivistic employees (1 SD above the mean) than for their less collectivistic counterparts (1 SD below the mean). Thus, Hypothesis 4b is supported. Figure 3 similarly shows that the positive relationship between the increases in change self-efficacy and increases in idea implementation is weaker for the employees who exhibit more collectivistic tendencies (1 SD above the mean). The post hoc analysis results suggest that the positive relationship between the increases in change self-efficacy and increases in idea implementation is also significantly weaker (p < .05) for this group relative to their less collectivistic counterparts (1 SD below the mean), thus providing support for Hypothesis 4c. However, we find no support for Hypothesis 4a.

Supplementary Analyses: Assessing Conditional Indirect Effects

We followed the approach used by Preacher et al. (2007) to obtain the estimated indirect effects at different levels of the moderator. Table 5 presents the results. There are six possible moderated mediation relationships to be evaluated. The results show significant moderated mediation effects in four of the six cases, with the exception of the two cases in which the increases in creative self-efficacy were used as the mediators.

First, the indirect effect of the increases in organizational trust on the increases in idea dissemination via the increases in persuasion self-efficacy is .09 (p < .05), .05 (p < .05), and .02 (ns) when the degree of psychological collectivism is low (1 SD below the mean), medium (at the mean), and high (1 SD above the mean), respectively.
respectively. Second, the indirect effect of the increases in organizational trust on the increases in idea implementation via the increases in change self-efficacy is .07 (p < .05), .04 (p < .05), and .01 (ns) when the degree of psychological collectivism is low, medium, and high, respectively. Third, the indirect effect of the increases in perceived respect on the increases in idea dissemination via the increases in persuasion self-efficacy is .21 (p < .01), .13 (p < .01), and .04 (ns) when the degree of psychological collectivism is low, medium, and high, respectively. Third, the indirect effect of the increases in perceived respect on the increases in idea dissemination via the increases in persuasion self-efficacy is .21 (p < .01), .13 (p < .01), and .04 (ns) when the degree of psychological collectivism is low, medium, and high, respectively. Third, the indirect effect of the increases in perceived respect on the increases in idea dissemination via the increases in persuasion self-efficacy is .21 (p < .01), .13 (p < .01), and .04 (ns) when the degree of psychological collectivism is low, medium, and high, respectively. Third, the indirect effect of the increases in perceived respect on the increases in idea dissemination via the increases in persuasion self-efficacy is .21 (p < .01), .13 (p < .01), and .04 (ns) when the degree of psychological collectivism is low, medium, and high, respectively. Third, the indirect effect of the increases in perceived respect on the increases in idea dissemination via the increases in persuasion self-efficacy is .21 (p < .01), .13 (p < .01), and .04 (ns) when the degree of psychological collectivism is low, medium, and high, respectively. Third, the indirect effect of the increases in perceived respect on the increases in idea dissemination via the increases in persuasion self-efficacy is .21 (p < .01), .13 (p < .01), and .04 (ns) when the degree of psychological collectivism is low, medium, and high, respectively. Third, the indirect effect of the increases in perceived respect on the increases in idea dissemination via the increases in persuasion self-efficacy is .21 (p < .01), .13 (p < .01), and .04 (ns) when the degree of psychological collectivism is low, medium, and high, respectively.
Estimates of Conditional Indirect Effects

<table>
<thead>
<tr>
<th>IV</th>
<th>MED</th>
<th>MOD</th>
<th>DV</th>
<th>IV → MED</th>
<th>MED × MOD → DV</th>
<th>1 SD below the mean</th>
<th>At the mean</th>
<th>1 SD above the mean</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>ΔOT</td>
<td>ΔCRSE</td>
<td>PCOL</td>
<td>ΔIG</td>
<td>**</td>
<td>ns</td>
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<td>—</td>
<td>No moderated mediation effects</td>
</tr>
<tr>
<td>ΔOT</td>
<td>ΔPSE</td>
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<td>**</td>
<td>**</td>
<td>.09*</td>
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<td>A significant moderated mediation effect</td>
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<tr>
<td>ΔOT</td>
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<td>A significant moderated mediation effect</td>
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<td>ΔPR</td>
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<td>No moderated mediation effects</td>
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<tr>
<td>ΔPR</td>
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<td>ΔPR</td>
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<td>.09*</td>
<td>.05*</td>
<td>.01</td>
<td>A significant moderated mediation effect</td>
</tr>
</tbody>
</table>

Note. ns = nonsignificant; Δ = increases over time; IV = independent variable; MED = mediator; MOD = moderator; DV = dependent variable; SD = standard deviation; OT = organizational trust; PR = perceived respect; CRSE = creative self-efficacy; PSE = persuasion self-efficacy; CHSE = change self-efficacy; PCOL = psychological collectivism; IG = idea generation; ID = idea dissemination; II = idea implementation.

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

Collectivism is low, medium, and high, respectively. Fourth, the indirect effect of the increases in perceived respect on the increases in idea implementation via the increases in change self-efficacy is .09 (p < .05), .05 (p < .05), and .01 (ns) when the degree of psychological collectivism is low, medium, and high, respectively. In sum, the increases in persuasion and change self-efficacy mediate the effects of the increases in organizational trust and perceived respect on the increases in idea dissemination and implementation, respectively, except among the highly collectivistic individuals (1 SD above the mean).

Supplementary Analyses: Temporal Effects and Confounding Influence of Tenure

Finally, we conducted two analyses to address two important issues. First, we explored whether it is reasonable to treat trust and respect as preceding domain-specific self-efficacy, which precedes innovative behavior. We find trust at Time 1 to be significantly related to persuasion self-efficacy at Time 2 (β = .13, p < .05), but not to creative or persuasion self-efficacy at Time 2 in the presence of the degree of psychological collectivism (low, medium, and high, respectively). In sum, the increases in persuasion and change self-efficacy mediate the effects of the increases in organizational trust and perceived respect on the increases in idea dissemination and implementation, respectively, except among the highly collectivistic individuals (1 SD above the mean).

Discussion

Implications for Theory Development

The research related to innovative behavior has largely overlooked the agentic perspective on this important type of performance behavior. An increased display of innovative behavior indicates that an individual is intentionally making things happen through his or her own actions (Janssen, 2004). Our findings show that employees who are increasingly confident in their ability to be creative, persuade others, and successfully handle change demonstrate increasing amounts of three types of innovative behavior. We contribute to the literature related to innovative behavior by taking the first step toward substantiating an agentic perspective that emphasizes employees’ cognitive beliefs about their domain-specific innovative capacity. As pointed out by Bandura (1995) in his discussion of social changes, innovative achievements require “a resilient sense of efficacy” because “innovations demand heavy investment of effort over a long period with uncertain results” (p. 13).

We also contribute to the innovative behavior literature by directing researchers’ attention beyond creative self-efficacy to consider persuasion and change self-efficacy as ingredients for effective overall innovative performance. Increases in creative self-efficacy are certainly a core precursor of increases in idea generation, which is arguably a prerequisite for any other type of innovative behavior to occur. However, similar to the important role that increased creative self-efficacy plays in promoting idea generation (Tierney & Farmer, 2002), employees who hope to
increase their participation in idea dissemination and implementa-
tion may first need to feel an enhanced confidence in their ability
to do so. Consequently, to promote increases in overall innovative
performance, employees should experience growth in all three
types of domain-specific self-efficacy. Although our study did not
directly test the matching principle that domain-specific self-
efficacy has the strongest effects only on corresponding domain-
specific innovative behavior, it highlights the potential value of
differentiating domain-specific self-efficacy beliefs about one’s
innovative capacity.

We further contribute to the innovative behavior literature by
identifying two important psychosocial factors—within-individual
increases in organizational trust and perceived respect—that may
decrease employees’ anxiety and fear about attempts at innovation,
built a psychologically safe environment in which they may be
innovative, and facilitate growth in their self-efficacy beliefs.
Consistent with Edmondson’s (1999) observation that individuals
feel safer speaking up when they feel that trust and respect exist
within the workplace, we find that enhanced feelings of trust and
respect are associated with increases in domain-specific self-
efficacy beliefs about one’s innovative capacity. These results are
also consistent with social–cognitive theory in that domain-
specific self-efficacy beliefs grow over time with increases in
positive psychosocial conditions that help to reduce aversive emo-
tions. As Bandura (1977, 1997) emphasizes, when individuals do
not feel anxious and fearful about a situation (e.g., promoting
innovation)—for example, when they increasingly perceive their
organization as being trustworthy and themselves as being
respected—they are likely to experience growth in their perceived
ability to control that situation.

According to Bandura (2001, 2012), personal agency operates
within the broader network of sociostructural influences, and self-
efficacy effects may depend on the degree to which an individual
values the collective goals. This study provides full support for
Bandura’s claim. We observe that the relationships between the
within-individual increases in persuasion and change self-efficacy,
and the within-individual increases in idea dissemination and
implementation, respectively, are weaker for individuals with high
levels of psychological collectivism. Indeed, when these levels are
high (1 standard deviation above the mean), there are no mediating relationships
between the increases in trust and respect, self-efficacy, and inno-
native behavior. In other words, collectivists may be more hesitant
to increase their innovative behavior even when they have strong
domain-specific self-efficacy beliefs, presumably because they are
concerned that increasing such behavior may disrupt social har-
mony. Thus, this study highlights the between-individual variability
in the extent to which individuals’ confidence in their innova-
tive capacity affects their innovative behavior, a variability that
partially stems from whether the individuals are predisposed to
consider the interests of others.

The interaction effect of increases in creative self-efficacy and
psychological collectivism on increases in idea generation is not
significant in this study. However, the two interaction effects
involving increases in persuasion and change self-efficacy are
significant. One possible explanation is that psychological collec-
tivism is less likely to interfere with the increased motivation to
generate new ideas than with the increased motivation to persuade
others of the value of those ideas or to actually implement them, as
idea generation is arguably the least disruptive type of innovative
behavior. Because the new ideas in question are only created and
neither spread nor implemented, an employee’s strong interper-
sonal concerns may exert little effect because he or she (or his or
her colleagues) does not consider this type of innovative behavior
as overly disruptive to the status quo. In contrast, because in-
creases in idea dissemination and implementation obviously in-
volve others and affect the workplace, psychological collectivism
becomes a more salient moderator of the effects of the increases in
self-efficacy beliefs on the increases in these two types of inno-

Finally, we hope that this study stimulates further investigations
of innovative behavior from a dynamic perspective. Most of the
literature related to innovative behavior has relied either on cross-
sectional research designs or designs that involve separate mea-
sures of the independent and dependent variables (e.g., Scott &
Bruce, 1994; Zhang & Bartol, 2010). However, scholars have
noted that these static research designs do not truly test organiza-
tional theories, which invariably imply that when one variable
changes, the other variables also change (Pitariu & Ployhart, 2010;
Ployhart & Vandenberg, 2010). Thus, researchers have been asked
to instead examine the changes in constructs over time. This study
contributes to the literature by providing evidence to show that
such a within-individual change perspective on innovative behav-
ior is both useful and informative, that dynamic mediation effects
involving innovative behavior do occur, and that such a change
perspective can be extended to incorporate between-individual
moderators.

Limitations of the Research

Interpretations of the findings of this study are subject to several
methodological constraints. First, although our data were some-
what nested in nature (267 respondents from 60 organizations), we
examined no cross-level relationships. For instance, although we
collected all of our data from one country, there might have been
organization-level differences in the collectivistic values we con-
sidered. However, owing to the use of convenience sampling, only
a few of the respondents represented one organization in many
cases (24 firms had only one respondent, 17 firms had two or three
respondents, 13 firms had four to six respondents, five firms had
nine to 12 respondents, and one firm had 87 respondents), render-
ing cross-level analyses less meaningful. We did control for the
influence of 87 respondents being from the same organization, to
address the concern that the idiosyncratic characteristics of that
organization might have affected whether and how psychological
collectivism moderates the relationship between increases in self-
efficacy and increases in innovative behavior.

Second, we relied on our personal networks to recruit respond-
dents. As a result of the strong encouragement by the managers of
the participating firms, response rates were high (87% to 95% ac-
cross the three waves). There were two particular reasons why the
managers were motivated to participate in our research. First, a
majority of the firms (78%) were small and medium-sized orga-
nizations with fewer than 500 employees; such firms are particu-
larly eager to innovate to foster organizational growth. Indeed,
researchers observe that innovations do successfully enhance per-
formance in small and medium-sized firms in Italy (Cozza, Mal-
erba, Mancusi, Perani, & Vezzulli, 2012). Second, the recent
financial crisis in Europe has also heightened decision makers’
sensitivity to the need for innovation (Lodigiani & Pesenti, 2014). For instance, a recent study of European nations (including Italy) shows that innovations enhance a country’s economic stability and promote investors’ confidence in a country’s ability to cope with a financial crisis (Adcock, Hua, Mazouz, & Yin, 2014).

To assess whether our convenience sampling method and the contextual factors relating to Italy might have any systematic influence on our data, it is important for future studies to examine our research questions in other countries. Such studies would strengthen the external validity of the results reported herein. For instance, because we collected data from only one nation, we could not examine the influence of national cultures. Following other researchers, we treated psychological collectivism as an individual difference rather than as a cultural characteristic (e.g., Clugston, Howell, & Dorfman, 2000; Lam, Schaubroeck, & Aryee, 2002). Thus, we fully expected there to be significant between-individual variability in the levels of psychological collectivism. Nonetheless, future research should examine the cross-national differences in collectivistic values (Hofstede, 1980; House, Hanges, Javidan, Howell, & Dorfman, & Gupta, 2004).

Third, although the empirical results gathered here suggest that the proposed theoretical model is partially supported by the empirical data, we cannot infer definite causality because our research design was nonexperimental in nature. However, in the supplementary analyses of temporal effects, we observe modest evidence that trust and respect precede self-efficacy, which in turn precedes innovative behavior. Fourth, although we examined increases in organizational trust and perceived respect as predictors of increases in self-efficacy, we certainly could have considered other psychological variables. Fifth, although we followed the change approach recommended by Ployhart and Vandenberg (2010), we did not examine different forms of change, such as linear versus nonlinear change trajectories.

Sixth and finally, all of the data were self-reported by the respondents at each time point. Although we demonstrate that common method variance is not a significant threat in our data analyses, the use of self-report instruments may have affected our results. As such, future research must examine outside ratings or objective counts of innovative behavior. We also observe in the correlation matrix (see Table 1) that the correlations between the repeated measures administered at Times 2 and 3 are generally larger than the correlations between the same repeated measures administered at Times 1 and 2. This pattern may reflect genuine intraindividual changes, in which the respondents’ answers at Times 2 and 3 converged more than their answers at Times 1 and 2. However, this pattern may also reflect the influence of a history effect, in which the respondents became more familiar with the survey questions and format as a result of using a self-reporting methodology at all three time points. Thus, we examined the influences of common method variance using the aforementioned CFA technique, that is, specifying a latent common method factor to underlie the repeated measures administered at Times 1, 2, and 3. Including a common method variance factor does not change the factor loadings of any item except in the case of idea dissemination, in which one item at Time 3 changes from significant to nonsignificant. This indicates that the use of the same methodology at all three of the time points did not create a substantial or threatening common method variance.

Managerial Implications

Our findings also have several managerial implications. First, they inform managers of the need to understand the agency perspective on innovative behavior if they want to encourage additional such behavior in their employees. Promoting such cognitive beliefs about one’s innovative capacity is the key to determining whether employees will continuously exhibit innovative behavior. In addition, our finding that increases in creative, persuasion, and change self-efficacy are related to increases in idea generation, dissemination, and implementation, respectively, suggests that creativity training should not be limited to improving creative self-efficacy. Simply focusing on any one of the three types and neglecting the other two is likely to yield low returns on human resource investment in this area (Scott & Bruce, 1994).

Second, our finding that increases in both organizational trust and peer respect are related to increases in self-efficacy suggests to managers that employees are greatly concerned with the consequences of engaging in innovative behavior. They are unlikely to experience increased confidence in doing so if the work environment appears to be unwelcoming of innovative behavior, in turn creating anxiety and fear. On the contrary, they are likely to feel increasingly confident in doing so when they increasingly feel that their organizations are trustworthy overall, and when they increasingly enjoy positive reputations among their peers. Thus, firms hoping to promote innovative behavior among their employees should focus leaders’ attention on this particular aspect of their management style (that is, on cultivating a growth in trust and creating a friendly workplace environment in which employees feel respected).

Third, our finding that psychological collectivism moderates the dynamic relationship between self-efficacy and innovative behavior should inform managers of the need to consider individual differences in social orientation if they wish to boost within-individual growth in innovative behavior. If employees have a strong orientation toward preserving social harmony (as collectivists do), even promoting within-individual growth in domain-specific self-efficacy is unlikely to promote such behavior. This situation creates a management dilemma, as from an organization’s perspective, it is beneficial to recruit and retain employees who prioritize collective goals. However, if psychological collectivism impedes innovation, as we find it to do, then managers must consider additional ways of promoting innovation, such as the use of rewards that are linked to innovative performance.

Finally, our findings highlight the importance of a managerial cognizance of the dynamic relationships between innovative behavior and other variables, as they suggest that employees engage in the three types of behavior to varying extents at different times. Increases or decreases in innovative behavior among employees are not necessarily persistent. Rather, the level of innovative behavior is subject to change as time passes. The strategies for promoting innovative behavior must be periodically revised, and the workplace conditions and psychological climates that may inhibit such behavior must be monitored regularly.
Conclusion

We hope that the findings presented herein stimulate further studies to adopt an agentic perspective on innovative behavior and examine how domain-specific self-efficacy beliefs are nurtured internally. We also hope that future studies examine the between-individual difference in psychological collectivism in greater depth to provide a better understanding of when and why employees engage in more or less innovative behavior to varying extents over time. More broadly, we encourage scholars to extend the social-cognitive theory perspective by identifying and examining additional ways in which employees construct domain-specific self-efficacy through social cues in the workplace, and how and why domain-specific self-efficacy beliefs are important precursors of innovative behavior.

References


Hu, L., & Bentler, P. M. (1999). Cutoff criterion for fit indexes in covariance structure analysis: Conventional criteria versus new alterna-


Appendix

Measurement Scales

Organizational Trust
In general, I believe my employer’s motives and intentions are good.
My employer is always honest and truthful.
I fully trust my employer.
My employer is open and upfront with me.
I believe my employer has high integrity.
I think my employer treats me fairly.
I can expect my employer to treat me in a consistent and predictable fashion.

Perceived Respect
My colleagues respect my values.
I believe that I have a good reputation among my colleagues.
I believe that my colleagues react well to me, to what I say and do.
I believe that I make a good impression on my colleagues.
I believe that most colleagues here like me.
Most colleagues are impressed by what I have accomplished at work.
Most colleagues respect me.

Creative Self-Efficacy
I have confidence in my ability to solve problems creatively.
I feel that I am good at generating novel ideas.

Persuasion Self-Efficacy
I am always successful at persuading others to take my suggestions.
I feel confident when I defend an opinion at work.
When I have to do the talking at work, I always feel enthusiastic.
I do not feel nervous when I have to give instructions to other colleagues.
I have excellent persuasion skills and tactics.

Change Self-Efficacy
Wherever an organizational change takes place, I’m sure I can handle it.
I think I cope with change better than most of those with whom I work.
When dramatic changes happen in this organization, I feel I can handle them with ease.
I have little doubt I can perform well following an organizational change.
I believe I will perform well in my job situation following an organizational change.

Psychological Collectivism
I like to work by myself rather than in a group. (reverse-coded)
If a group is slowing me down, it is better to leave it and work alone. (reverse-coded)

(Appendix continues)
To be superior, I must stand alone. (reverse-coded)

I do better work when working alone than in a group. (reverse-coded)

I would rather struggle through a personal problem by myself than discuss it with my friends. (reverse-coded)

I shouldn’t accept the group’s decision when personally I have a different opinion. (reverse-coded)

Problem solving by myself gives better results than problem solving by groups. (reverse-coded)

The needs of people close to me should not take priority over my personal needs. (reverse-coded)

I generate original solutions to problems.

**Idea Dissemination**

I mobilize support for innovative ideas.

I acquire approval for innovative ideas.

I make important organizational members enthusiastic for innovative ideas.

**Idea Implementation**

I transform innovative ideas into useful applications.

I introduce innovative ideas into the work environment in a systematic way.

I evaluate the utility of innovative ideas.

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