THE POWER OF THE FEEDBACK ENVIRONMENT IN STIMULATING CREATIVE PERFORMANCE:
THE ROLE OF TASK AUTONOMY AND SELF-CONCORDANCE

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This study examines the impact of employees’ perceptions of their feedback environment on their level of creativity. Hierarchical regression analysis of a sample of 482 supervisor-employee dyads demonstrated that employees’ perceptions of their feedback environment indirectly influenced their creative performance by increasing their level of self-concordance, i.e., the degree to which they internalize their work goals and consider these goals as an expression of their authentic interests and values. In addition, moderated mediation analysis revealed that autonomy moderates the relationship between employees’ feedback environment perceptions and self-concordance. This moderated mediation model was supported for feedback environment perceptions relating to two important feedback sources in the workplace, supervisors and coworkers. The moderating effect of autonomy was especially strong for the coworker feedback environment model, such that the positive effect of coworker feedback environment perceptions on creative performance through self-concordance only held when employees experienced high levels of task autonomy. The results of the present study highlight the relevance of relating the broader psychological feedback context to creative performance and emphasize the importance of investigating the mechanisms that mediate and moderate this relationship.

**Keywords:** Employee Creativity, Feedback Environment, Self-Concordance, Task Autonomy
INTRODUCTION

Reflecting the importance of innovation and creativity for today’s organizations, considerable research efforts have identified and described the managerial interventions that stimulate employee creativity at work (Amabile & Mueller, 2008; Shalley, Zhou, & Oldham, 2004; Zhou & Shalley, 2008), defined as the extent to which employees generate novel and useful ideas regarding procedures and processes at work (Oldham & Cummings, 1996; Shalley, 1991). This literature reveals that feedback is a powerful tool for stimulating creative performance (Farr & Ford, 1990; George & Zhou, 2001; Zhou, 1998; Zhou & George, 2001, see Zhou, 2008 for a recent review). Feedback can boost employees’ intrinsic motivation, provide them with standards for creative work and help them acquire creativity skills and strategies. Whether or not feedback impacts creative performance largely depends on the nature and characteristics of the feedback that is given, on characteristics of the feedback giver, and on characteristics of the feedback source (Zhou, 2008). For example, examining how characteristics of the feedback and the style of the feedback giver affect employee creativity, Zhou (1998) found that when individuals receive positive feedback presented in an informative, constructive style, they are more likely to generate creative ideas. In contrast, negative feedback delivered in a controlling way hinders creative performance. Researchers continue to examine how other feedback characteristics, such as the developmental orientation of feedback (Zhou, 2003), and the perceived usefulness of feedback (Zhou & George, 2001) impact employee creativity.

While this body of research offers important insights into how feedback interventions can best be construed in order to enhance employee creativity, Zhou (2008) notes that one limitation of the extant research is that it has studied the impact of isolated feedback interventions on creative performance. As a consequence, the relationship between feedback and creative performance has been examined in relatively narrow contexts, without considering the more aggregate feedback environment, consisting of the feedback that employees receive on different tasks and from a wide variety of sources in a variety of ways (Zhou, 2008). However, recent developments within the feedback literature suggest that in order to fully understand how feedback affects work-related outcomes, researchers should not only consider single feedback interventions, but also look at the broader psychological feedback context in which these feedback interventions take place (e.g., Anseel & Lievens, 2007; Ashford & Northcraft, 2003; Herold & Parsons, 1985; Levy & Williams, 2004; Steelman, Levy, & Snell, 2004). One concept relevant for studying this psychological feedback context is the ‘feedback environment’ (Steelman et al.,
Defined as “the contextual aspects of day-to-day supervisor-subordinate and coworker-coworker feedback processes”, the feedback environment refers to the various characteristics of the ongoing feedback that is exchanged between employees and two important feedback sources in the workplace, i.e., supervisors and coworkers (Steelman et al., 2004: 166).

Considering the role of feedback as an essential ingredient for creative performance (Zhou, 2008) and following the shift within the feedback literature toward more comprehensive conceptualizations of feedback (Steelman et al., 2004), the present study proposes that integrating the concept of the feedback environment in the feedback-creativity research will further our understanding in at least two ways. First, as the more inclusive conceptualization of the feedback environment goes beyond the traditional, formal feedback systems in organizations, it is argued to be increasingly relevant in today’s organizations (Steelman et al., 2004). Indeed, due to its comprehensive approach and its fit with the reality of the organizational context, researchers argue that this concept captures the more complex ways in which the interplay of contextual aspects affects work-related outcomes, such as affective commitment and well-being (Norris-Watts & Levy, 2004; Rosen, Levy, & Hall, 2006; Sparr & Sonnentag, 2008; Whitaker, Dahling, & Levy, 2007). Second, given that the concept of the feedback environment not only focuses on supervisors as a feedback source, but also incorporates coworkers as important sources of feedback in the workplace (Steelman et al., 2004), it allows for a thorough examination of the impact of coworker feedback on the creative process. This is especially relevant as coworkers have largely been neglected as a feedback source influencing the creative process (George & Zhou, 2007; Zhou, 1998, 2003) and considering the fact that recent theorizing and research suggests that coworkers take on an increasingly important role in today’s workplace (Chiaburu & Harrison, 2008; Drucker, 1994; Higgins & Kram, 2001).

In addition to broadening our view on the feedback-creativity relationship in terms of the conceptualization of feedback and the number of feedback sources, our research further adds to the literature by investigating the underlying mechanisms and boundary conditions for the relationship between the feedback environment and creative performance. Specifically, building on self-determination theory (SDT) (Deci & Ryan, 2000; Gagné & Deci, 2005) and drawing on related empirical research (e.g., Bono & Judge, 2003), we suggest that the feedback environment affects employees’ creativity by enhancing their level of self-concordance, i.e. the degree to which they internalize their work goals and consider these goals as an expression of their authentic interests and values. We also explore task autonomy as a potential moderator of this mediated relationship. Below, we develop moderated mediation hypotheses for both feedback sources and build up our research model (Figure 1).
The Feedback Environment and Creative Performance

Steelman and colleagues (2004) proposed that the feedback environment of employees consists of two key feedback sources, supervisors and coworkers. For both of these sources, seven facets are identified as being relevant for feedback processes: source credibility, feedback quality, feedback delivery, frequency of favorable feedback, frequency of unfavorable feedback, source availability, and support for feedback seeking. As such, a favorable supervisor or coworker feedback environment can be characterized as a work environment in which credible and available supervisors or coworkers provide employees with favorable as well as unfavorable veridical, high-quality feedback delivered in a considerate way, thereby also explicitly encouraging employee feedback-seeking behavior. Based on the feedback and creativity literature, a case can be made for a close link between this conceptualization of a favorable feedback environment and creative performance for at least two reasons.

First, many of the facets inherent in a favorable feedback environment have already been related to employee creativity in studies focusing on isolated feedback interventions. For instance, with regard to the feedback environment facet of ‘feedback delivery’, research has shown that feedback delivered in a supportive style, with the clear purpose of informing employees about their functioning, enhances creative performance (Zhou, 1998, 2008). This style of feedback delivery suggests that the feedback recipient is in control of his or her own behaviors or actions and it evokes the perception that the feedback giver’s goal is to help the feedback recipient to extend his or her creative capabilities (Zhou, 2008). Another feedback environment facet that has been found to stimulate creative performance is ‘high-quality feedback’, defined as useful, consistent and specific feedback (Zhou, 2003; Zhou & George, 2001). More specifically high-quality feedback enhances employees’ cognitive elaboration and deeper processing with regard to their task and the strategies they employ to accomplish this task (Zhou, 2003). In addition, this type of feedback provides them with helpful or valuable cues to learn, develop and make improvements in the job (Kluger & DeNisi, 1996). Both immersion in the task and focus on skill mastery are argued to be related to higher levels of creative performance (Utman, 1997; Weisberg, 1999; Zhou, 2003; Zhou & George, 2001).
Research has also shown that employee feedback-seeking behavior is positively associated with creativity at work (De Stobbeleir et al., In Press). As such, we expect that the extent to which coworkers and supervisors promote employee feedback-seeking behavior, as reflected in the ‘support for feedback-seeking’ facet of feedback environment, will influence the degree to which employees actively seek for more varied input, link ideas from multiple sources, and generate creative ideas. Finally, it should be noted that the facets relating to the frequency of favorable and unfavorable feedback refer to a more complex notion than the commonly used concept of feedback valence. More specifically, feedback valence simply assesses the extent to which the feedback is positive or negative, and negative feedback valence has been found to be detrimental for employee creativity (George & Zhou, 2001; Zhou, 1998). However, Steelman et al.’s (2004) definition of favorable and unfavorable feedback incorporates the feedback recipient’s perceptions with regard to the accuracy and veridicality of the feedback. According to their research even veridical unfavorable feedback is positively associated with satisfaction with feedback, desire to use feedback to improve performance, and motivation to ask for additional feedback. These results suggest that favorable and unfavorable veridical feedback, as facets of the feedback environment, will both stimulate perceived usefulness of feedback and feedback-seeking behaviour, and as such will encourage employee creativity.

Apart from the above-mentioned feedback environment facets related to the content and delivery of feedback, the concept of feedback environment is also characterized by two facets concerning characteristics of the feedback source, namely source availability and source credibility. Building on feedback and creativity research, we argue that both factors will be positively related to creative performance. More specifically, source availability, operationalized as the ease with which feedback can be obtained from coworkers and supervisors during informal day-to-day communications, enables employees to obtain varied input, benchmark and refine their ideas and in this way generate more creative ideas (Madjar, 2005). With regard to source credibility, research indicates that individuals are more willing to seek information from credible sources (Morrison & Vancouver, 2000). As a consequence, this facet of the feedback environment concept is also likely to stimulate employees to seek out information that allows them to approach their work in a creative way. In summary, empirical evidence for the relationship between the different feedback environment facets and employee creativity suggests that the feedback environment as a general context conducive for well-construed, frequent and high-quality feedback exchanges will encourage employee creativity.
Second, it has been argued that a favorable feedback environment is characterized by a sense of support and encouragement (Sparr & Sonnentag, 2008), which is conducive for creative performance (Shalley & Zhou, 2008). More specifically, the benevolent characteristics of a favorable feedback environment are likely to make individuals feel appreciated, carefully treated and supported by their coworkers and supervisors (Sparr & Sonnentag, 2008). Such support may encourage and motivate employees to approach their work creatively by exploring diverse creative alternatives and be persistent in their pursuit. Indeed, a key finding within the creativity literature is the value of a supportive and stimulating work environment (Shalley & Zhou, 2008). Consistently, laboratory and field research have found that a supportive and stimulating work environment is positively associated with creativity (Oldham, 2003), and that a non-supportive or controlling work environment is negatively associated with creativity (e.g., Amabile & Conti, 1999; Madjar, Oldham, & Pratt, 2002; Zhou, 2003). Such support can come from a variety of sources, such as supportive leadership (e.g., Amabile, Conti, Coon, Lazenby, & Herron, 1996; Amabile, Schatzel, Moneta, & Kramer, 2004; Shin & Zhou, 2003; Tierney & Farmer, 2002, 2004) and supportive coworkers (e.g., Amabile et al., 1996; George & Zhou, 2001; Zhou, 2003).

Building on these arguments and the demonstrated impact of feedback on the creative process (Zhou, 2008), we hypothesize:

**Hypothesis 1a:** Employees’ perceptions of a favorable coworker feedback environment will be positively related to their level of creative performance.

**Hypothesis 1b:** Employees’ perceptions of a favorable supervisor feedback environment will be positively related to their level of creative performance.

**The Feedback Environment and Self-Concordance**

Building on SDT, we suggest that the feedback environment will impact employees’ creative performance through the mechanism of self-concordance (Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001). Self-concordance refers to the extent to which people pursue their work goals with a sense of self-determination, rather than with a sense of obligation. More specifically, in line with SDT (Deci & Ryan, 1985), the self-concordance model posits that the reasons why people engage in certain activities range on a continuum from more internal reasons for goal pursuit to more external reasons for goal pursuit. When employees pursue their work goals because they identify with these goals (identified motivation) or because they find these goals highly interesting and enjoyable (integrated motivation),
they experience high levels of self-concordance throughout their goal pursuit (Bono & Judge, 2003; Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001). In contrast, the self-concordance level of employees is lower when they pursue their work goals in order to obtain extrinsic rewards or to avoid punishments (external motivation) or because of coercive social pressure, such as a sense of obligation (introjected motivation). In sum, the more internal the reason for goal pursuit, the more congruent the goal will be with individuals’ authentic interests and core values, i.e., the higher individuals’ level of self-concordance.

Given our adoption of a relatively new concept – self-concordance – and its relative resemblance with intrinsic motivation, a concept frequently adopted within the creativity domain, we believe it is important to briefly explain our motives for introducing it in this study. First, empirical research on the mediating role of intrinsic motivation between contextual factors and individuals’ creative performance has yielded inconsistent results (Shalley & Perry-Smith, 2001; Shin & Zhou, 2003). We argue that these inconsistent results are due to inadequate measurement of the motivational mechanism underlying the feedback-creativity relationship. Building on previous research relating contextual factors to creativity through self-concordance (e.g., Bono & Judge, 2003), we propose that self-concordance might be a more adequate and realistic measure to this end. More specifically, as self-concordance represents a broad continuum of goal-based motivations, it allows for the simultaneous assessment of the more external and internal reasons for goal pursuit and it measures the degree to which internalization of work goals has occurred and these goals are assimilated into the self. As such, it acknowledges that much of what people do is not purely intrinsically motivated (Deci & Ryan, 2000) and it might not be realistic to propose that creative performance only stems from intrinsic motivation. In other words, a more relative motivational mechanism, such as self-concordance, might provide a more realistic and nuanced motivational measure than intrinsic motivation. Second, self-concordance is by definition a goal-oriented or conative concept. Goals and the associated reasons for their pursuit are central to the self-concordance model (Bono & Judge, 2003). In contrast, intrinsic motivation is not goal-based and does not place a lot of emphasis on goal-directed behavior. As such, focusing on individuals’ proactive efforts to attain outcomes that are in line with their authentic interests and values, the self-concordance model fits well within the proactive and self-generating mindset essential for creative performance. Indeed, displaying creativity throughout work goal pursuit often requires job performance beyond expectations (Shalley, 2008).
Building on research suggesting that contextual factors may influence employees’ level of self-concordance (Bono & Judge, 2003), we hypothesize that when employees hold perceptions of a favorable feedback environment, they will be more likely to see their work goals as self-concordant. First, SDT (Deci & Ryan, 2000; Gagné & Deci, 2005; Ryan & Deci, 2000) suggests that informational practices, such as feedback, may lead employees to internalize their work goals and thus consider these as being more self-concordant. More specifically, when supervisors or coworkers create a favorable feedback environment, they are by definition designing a context in which ongoing performance information is being exchanged in a supportive, constructive way and in which employees feel free to seek feedback themselves. This ample availability of elaborate and trustworthy performance feedback is essential for employees to make informed decisions and to develop a sense of ownership at work (Sparr & Sonnentag, 2008). In addition, a favorable feedback environment provides employees with behaviorally relevant information about goal progress and possible strategies to attain goals. This might foster enhanced interest in the task itself, helping employees to direct their attention to their work goals instead of to external worries and concerns (Shalley et al., 2004; Zhou, 2003; Zhou & George, 2001). In sum, the constructive, informative function of a favorable feedback environment can be expected to facilitate internalization of work goals.

When there is a favorable feedback environment, employees do not only receive essential information for reaching their goals and taking ownership of them, but they should also be more likely to perceive their work goals to be meaningful. In a favorable feedback environment employees receive appreciation and support from supervisors and coworkers (Hutchison & Garstka, 1996; Sparr & Sonnentag, 2008). This appreciation and support involves behaviors, such as providing useful suggestions with regard to work activities, being considerate of employees’ feelings when providing feedback, letting people know when they do a good job and being responsive to their thoughts, questions and initiatives (Steelman et al., 2004). It is argued that such kind of behaviors help employees to focus more on their work goals, and to become more convinced of the value and effectiveness of their efforts (Zhou & George, 2001). Indeed, Gagné, Senécal and Koestner (1997) have found empirical support for the positive association between feedback from others and perceptions of meaningfulness at work. The above arguments suggest that when employees perceive a favorable feedback environment, they will be more inclined to find their work meaningful, and to integrate their work goals into themselves, resulting in higher levels of self-concordance.
As such, to the extent that feedback may provide employees with the necessary information to take ownership of their goals and to the extent that it may help employees to see the value of their work, they should also be more likely to see their goals as being congruent to their personal goals and values (Gagné & Deci, 2005; Ryan & Deci, 2000). Hence:

*Hypothesis 2a*: Coworker feedback environment perceptions will influence employees’ feelings of self-concordance, such that employees’ perceptions of a favorable coworker feedback environment will lead them to feel more self-concordant throughout their goal-striving.

*Hypothesis 2b*: Supervisor feedback environment perceptions will influence employees’ feelings of self-concordance, such that employees’ perceptions of a favorable supervisor feedback environment will lead them to feel more self-concordant throughout their goal-striving.

**Self-Concordance and Creative Performance**

As alluded to above, we expect that the degree to which employees internalize their work goals will impact the extent to which they will display creativity at work. Prior research shows that employees’ level of self-concordance is related to their overall well-being, job satisfaction, and performance (Bono & Judge, 2003; Miquelon & Vallerand, 2008; Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001). Some initial empirical research also suggests that self-concordance impacts creative performance. Specifically, Bono and Judge (2003) found that individuals with more self-concordant work goals demonstrated more personal initiative and better creative and extra-role performance. Theoretically, two arguments can be made for why self-concordance affects creative performance.

First, as Sheldon and Elliot (1999) note, a key characteristic of self-concordance is that employees feel ownership for their goals. As self-concordant goals express developing interests and deep-seated values of individuals, individuals take responsibility for these goals, are energized by them and put sustained effort in them (Ryan & Deci, 2000; Sheldon & Elliot, 1999). Therefore, individuals striving for self-concordant goals are more likely to pay close attention to their goals and exhibit great cognitive effort in pursuing them, two prerequisites for creative performance (Zhou, 2008). Indeed, previous theorizing within the creativity domain posits that creativity is most likely to result from strong
interests in the work that employees engage in, and from employees’ being persistent and hard-working (Zhou, 2008).

Furthermore, individuals pursuing self-concordant work goals may be more likely to find many alternatives to solve problems, use non-traditional approaches in carrying out their work and in this way exhibit more creativity (Zhou, 2008). For example, research shows that individuals who pursue goals that are in line with their core values are cognitively more flexible (Deci & Ryan, 1987; McGraw & Fiala, 1982; McGraw & McCullers, 1979), while individuals with more external reasons for acting tend to display more rigid cognitive activity (Deci & Ryan, 1987). Building on these arguments, we suggest:

*Hypothesis 3:* Employees who view their work goals as more self-concordant will be more likely to display creativity at work.

Based on the above arguments and in line with initial empirical evidence for the mediating role of self-concordance between contextual factors and creative performance (Bono & Judge, 2003), we expect that the self-concordance level of employees’ goals will mediate the relationship between their feedback environment perceptions and their creative performance. That is, we propose that when employees perceive their coworkers or supervisors to provide them with useful, favorable as well as unfavorable, veridical feedback and encouragement for feedback-seeking behavior, they will be more inclined to take ownership of their work goals. This increased level of self-concordance will in turn lead them to exert more effort and to be cognitively more flexible, such that they will display higher levels of creativity. Hence, we propose:

*Hypothesis 4a:* Self-concordance mediates the relationship between employees’ perceptions of their coworker feedback environment and their level of creativity.

*Hypothesis 4b:* Self-concordance mediates the relationship between employees’ perceptions of their supervisor feedback environment and their level of creativity.
Finally, we suggest that feedback will not affect employees’ sense of self-concordance and their subsequent creative performance unless employees have the discretion to act upon the feedback that is available to them in their feedback environment. As such, we propose that employees’ experienced task autonomy will moderate the relationship between their feedback environment perceptions and their level of self-concordance. More specifically, we assert that employees receiving a lot of freedom and independence in carrying out their work assignment will be more likely to be motivated by the feedback they receive at work and as a consequence display higher levels of creative performance. Conversely, when employees don’t have the discretion to respond to the cues in their feedback environment, they will be less likely to take ownership of their goals, resulting in lower levels of creativity at work. Several theoretical and empirical contributions provide support for our proposal.

Research on the role of feedback interventions on creativity has already shown that task autonomy is an important moderator of the feedback-creativity relationship. For example, Zhou (1998) showed in the lab that in order for positive feedback delivered in an informational style to be effective, individuals need to work under high task autonomy conditions. In addition, in the feedback literature Ilgen, Fisher and Taylor (1979) argue that, apart from feedback, a sense of autonomy or personal control is an important condition to promote internalization of work assignments. Also within the general performance literature, research has shown that feedback contributes to performance under high autonomy tasks, while feedback in low autonomy tasks only has little impact on performance (Dodd and Ganster, 1996). Therefore, we expect that autonomy will moderate the mediated relationship between perceptions of the supervisor or coworker feedback environment and creativity by affecting the first path of the mediation, i.e., the relationship between the coworker or supervisor feedback environment and self-concordance. Thus:

*Hypothesis 5a:* Autonomy will moderate the strength of the mediated relationship between a favorable coworker feedback environment and creative performance via self-concordance, such that the mediated relationship will be stronger under high autonomy than under low autonomy conditions.

*Hypothesis 5b:* Autonomy will moderate the strength of the mediated relationship between a favorable supervisor feedback environment and creative performance via self-concordance, such that the mediated relationship will be stronger under high autonomy than under low autonomy conditions.
METHOD

Participants

Data were collected as part of a larger research project on proactivity and feedback dynamics in organizations. The sample consisted of 482 supervisor-subordinate dyads from four consulting firms, each employing between 300 and 800 employees. We focused on the knowledge workers within these firms. While creativity is not an explicit part of their job, creating new knowledge and approaching their work creatively is thought to be important to succeed in knowledge work (Davenport, 2005).

Two sets of online questionnaires were used: a subordinate survey and a survey for the immediate supervisors of the subordinates. For each of the organizations a database of knowledge workers was developed in cooperation with the human resources department, using Davenport’s (2005: 19) definition of knowledge work as our selection criteria: “knowledge workers have high degrees of expertise, education, or experience, and the primary purpose of their jobs involves the creation, distribution or application of knowledge”.

Research design and procedures

Employees and their supervisors filled out the online survey during regular working hours. To limit the burden on the supervisors, who each supervised 3 to 11 employees (with an average of 4.3 employees), supervisors were asked to evaluate the creative performance of just three of their subordinates, whose names were selected at random. After three subordinates had been evaluated, the supervisors had the option of evaluating their other subordinates as well. Each participating supervisor evaluated on average 3.73 employees\(^1\). From a population of 908 employees and 162 supervisors, 661 employees and 122 supervisors filled out the survey (i.e., a response rate of 73% for both groups) and we obtained 482 usable supervisor–subordinate dyads out of 908 possible dyads (i.e., for an effective response rate of 53.1%). On average, the employee sample had 2.7 years of job tenure and had worked in their organization for 3.3 years. The average dyadic relationship length was 2.5 years. 73.2 percent of our employee sample was male, 77 percent worked full-time, and the average age was 34 years.

\(^1\) We tested for significant differences between the respondents who were rated by their superior and those who were not rated with regard to all study variables. Chi-square tests (i.e. for demographic variables) and two-sample t-tests indicated that there were no significant differences between the rated and the non-rated group of respondents.
Measures

Coworker and supervisor feedback environment. We used the Feedback Environment Scale (FES) validated by Steelman et al. (2004) to measure the coworker and supervisor feedback environment. In analogy with Dahling, Chau and O’Malley (In Press), we adopted a shortened version of this scale to assess the seven facets of the coworker and supervisor feedback environment: source credibility, feedback quality, feedback delivery, frequency of favorable feedback, frequency of unfavorable feedback, source availability, and promoting feedback-seeking. The aim of the present study was to examine the relationship of the general coworker and supervisor feedback environment with outcome, mediating and moderating variables. As a consequence, the aggregate of the coworker facets and the supervisor facets were used in analyses, as has been done in other studies (e.g., Norris-Watts & Levy, 2004; Whitaker et al., 2007). These facets were assessed with 5-point Likert-type scales ranging from strongly agree to strongly disagree. A sample item from the coworker FES is “My coworkers are often annoyed when I directly ask them for performance feedback (reverse-coded)” (α = .75). A sample item of the supervisor FES is “My supervisor gives me useful feedback about my job performance” (α = .85).

Self-concordance. To evaluate whether the motivation of employees to carry out their work tasks and attain their work goals was mainly autonomous or controlled, a goal-based measure of self-concordance was used (Bono & Judge, 2003; Sheldon & Elliot, 1999). Employees were asked to identify two of their short-term, job-related goals. Consistent with previous studies (e.g., Bono & Judge, 2003) we defined a short-term goal as one that could be accomplished in 60 days. After identifying these short-term goals, participants were asked to indicate their reasons for pursuing each goal by relating this goal to four statements representing a continuum of self-concordant reasons for goal pursuit. The statements were “You choose this goal because somebody else wants you to or because the situation demands it” and “You pursue this goal because you would feel anxious, guilty, or ashamed if you didn’t” (external and introjected items represent controlled motivation); “You pursue this goal because you really believe it’s an important goal to have” and “You pursue this goal because of the fun and enjoyment it provides you” (identified and intrinsic items represent autonomous motivation). These four statements were assessed for each of the two goals using a 5-point Likert-type scale ranging from not at all for this reason to completely for this reason. Following Bono and Judge (2003), we formed a
composite score of self-concordance by subtracting the controlled motivation score from the autonomous motivation score ($\alpha = 0.7$).

**Autonomy.** Autonomy was measured with the Work Design Questionnaire (Morgeson & Humphrey, 2006). According to Morgeson and Humphrey autonomy includes three interrelated aspects centered on freedom in (1) work scheduling, (2) decision-making, and (3) work methods. These aspects of autonomy were assessed using a 5-point Likert-type scale ranging from strongly agree to strongly disagree. A sample item is “The job provides me with significant autonomy in making decisions” ($\alpha = .79$).

**Creative performance.** Consistent with prior research, we used supervisor ratings to assess employees’ creative performance (Zhou, 1998, 2003; George & Zhou, 2001). Using 9 items (Janssen, 2000; Van der Vegt & Janssen, 2003) each supervisor rated how often their subordinates displayed creative behavior in the workplace on a 5-point scale ranging from never to always. A sample item taken from the scale reads “Seeks out new technologies, processes, techniques and/or product ideas”. Consistent with previous research (Janssen, 2000; Scott & Bruce, 1994; Van der Vegt & Janssen, 2003) these items loaded on a single factor ($\alpha = .92$).

**Controls.** Consistent with previous creativity research (e.g., Zhang & Bartol, 2010) we controlled for demographic variables that have been found to be significantly related to creativity (e.g., George & Zhou, 2001; Shalley et al., 2004): age, gender, job tenure, education and work experience.

**Analyses**

We tested our study hypotheses in two interlinked steps. First, we examined a simple mediation model (Hypotheses 1–4) using hierarchical multiple regressions in line with Baron and Kenny’s multistep approach (1986). According to this approach, four conditions should be met to establish mediation: 1) the independent variable and dependent variable should be significantly related (Hypothesis 1a, 1b); 2) the independent variable and mediating variable should be significantly related (Hypothesis 2a, 2b); 3) the mediator and dependent variable should be significantly related (Hypothesis 3); 4) the relationship between the independent variable and dependent variable should be non-significant or weaker when the mediator is added. Second, we integrated the proposed moderator variable into the model and we
empirically tested the overall moderated mediation hypothesis (Hypothesis 5a, 5b). More specifically, to test Hypotheses 5a and 5b, we utilized an SPSS macro designed by Preacher and his colleagues (2007). This macro facilitates the implementation of the recommended bootstrapping methods and provides a method for probing the significance of conditional indirect effects at different values of the moderator variable. Indeed, assuming our moderation hypothesis receives support, it is plausible that the strength of the hypothesized indirect effect is conditional on the level of the moderator (task autonomy), i.e., conditional indirect effect.

RESULTS

Table 1 presents the means, standard deviations, reliability coefficients, and correlations among the study variables. An inspection of the correlations reveals that both coworker feedback environment ($r = .21, p < .01$) and supervisor feedback environment ($r = .19, p < .01$) are positively related to self-concordance. Results also indicate that self-concordance is positively related to creative performance ($r = .15, p < .01$).

Tests of Mediation

The regression results for testing mediation (Hypotheses 1–4) are reported in Table 2, for coworker feedback environment, and Table 3, for supervisor feedback environment.

Results in Table 2 indicate that Hypothesis 1a, referring to the relationship between coworker feedback environment and creative performance, is supported ($\beta = .09$, $p < .05$). Similarly, results in Table 3 provide support for Hypothesis 1b, which proposes that supervisor feedback environment is
positively related to creative performance ($\beta = .11, p < .01$). Supporting Hypothesis 2a and 2b, we found a significant relationship between coworker feedback environment and self-concordance in Table 2 ($\beta = .21, p < .01$) and between supervisor feedback environment and self-concordance in Table 3 ($\beta = .18, p < .01$). Furthermore, regression analysis revealed that self-concordance was significantly related to creative performance, which supports Hypothesis 3 ($\beta = .15, p < .01$). And finally, we found that after self-concordance was taken into account, the effect of coworker feedback environment on creative performance ($\beta = .07, \text{ns}$) became non-significant. The effect of supervisor feedback environment on creative performance ($\beta = .09, p < .05$) became weaker, albeit still significant, suggesting partial mediation. The regression coefficient for self-concordance was still significant in contributing to creative performance in both the coworker as well as the supervisor feedback environment model when controlling for the control variables and the independent variable ($\beta = .13, p < .01$). Consequently, as shown in Table 2 and 3, the mediation hypothesis was fully supported for the coworker feedback environment model (Hypothesis 4a), and partially supported for the supervisor feedback environment model (Hypothesis 4b).

Tests of Moderated Mediation

Table 4 and 5 represent the results for hypothesis 5a and 5b. With regard to these hypotheses, we predicted that the mediational influence of self-concordance on the relationship between feedback environment perceptions and creativity would be moderated by task autonomy, such that high autonomy perceptions would strengthen this influence and low autonomy perceptions would weaken this influence. For the coworker feedback environment model, regression analyses were initially conducted indicating a statistical significant interaction between autonomy and coworker feedback environment ($B = .43, p < .01$) on self-concordance (mediator variable model) over and above the main effects of autonomy ($B = -1.41, p < .01$) and coworker feedback environment ($B = -1.55, p < .01$) independently. According to Preacher and colleagues (2007), this implies that the indirect effect of coworker feedback environment on creative performance through self-concordance is moderated by autonomy. To fully support Hypothesis 5a, the form of this interaction should conform to the
hypothesized pattern. Therefore, we applied conventional procedures for plotting simple slopes at one standard deviation above and below the mean of the autonomy measure (Figure 1). Consistent with our expectations, the slope of the relationship between coworker feedback environment perceptions and self-concordance was relatively strong and positive for high autonomy, whereas this slope was negative for low autonomy.

In order to assess the extent to which the mediational influence of self-concordance on the relationship between coworker feedback environment and creative performance was conditional on autonomy levels, the conditional indirect effect was estimated at different values of the moderator (see bottom of Table 4). Since the distribution of product terms is only asymptotically normal (e.g., MacKinnon, Lockwood, & Williams, 2004), we applied bootstrapping (n = 5000) for the estimation of conditional indirect effects at a number of values of the moderator (-3SD, -2SD, -1SD, mean, +1SD, +2SD) in line with recommendations of Preacher, Rucker and Hayes (2007). Results revealed that for high levels of autonomy (+2SD) the indirect effect of coworker feedback environment on creative performance through self-concordance was positive and significant (B = .06, p = .05, CI lower = .01, CI upper = .16) while the opposite was true for low levels of autonomy (-3SD) (B = -.09, p > .05, CI lower = -.22, CI upper = -.02).

Overall, Hypothesis 5a was supported to the extent that the indirect effect of coworker feedback environment on creativity was moderated by autonomy perceptions. However, the conditionality and the impact were stronger than hypothesized. More specifically, results indicate that the coworker feedback environment only impacts employee creativity through self-concordance when employees experience high levels of autonomy. For moderate levels of autonomy, the mediational influence of self-concordance disappears and for very low levels of autonomy the effect is even reversed, such that a favorable coworker feedback environment negatively impacts creativity through decreased levels of self-concordance when autonomy is low.

With regard to the supervisor feedback environment (Hypothesis 5b), the same analysis was performed, yielding a statistical significant interaction between autonomy and supervisor feedback environment (B = .19, p < .05) in the model for self-concordance (mediator variable model) over and above the main effect of supervisor feedback environment (B = -.69, p < .05) independently. These results imply that autonomy moderates the indirect effect of supervisor feedback environment on creative performance through self-concordance (Preacher et al., 2007). As can be seen in Figure 2 the interaction is in line with the hypothesized direction, showing a relatively strong and positive slope for high autonomy, and a negative slope for low autonomy.
Analogous to the coworker feedback environment model, analyses were performed to assess whether the indirect effect of supervisor feedback environment perceptions on creative performance through self-concordance level was conditional on autonomy levels. Although approaching significance at extreme values of autonomy, the conditional indirect effect obtained through bootstrapping at different values of autonomy (-3SD, -2SD, -1SD, mean, +1SD, +2SD) revealed non-significant findings with CIs containing zero. Thus, although autonomy moderates the mediational influence of self-concordance on the relationship between supervisor feedback environment and creative performance, this mediation is not conditional on perceptions of autonomy.

In sum, the results of our regressions and moderated mediation analyses show that self-concordance mediates the relationship between perceptions of the coworker feedback environment and creative performance (Hypotheses 1a-4a), as well as the relationship between perceptions of the supervisor feedback environment and creative performance (Hypotheses 1b-4b). Furthermore, in both cases the strength of this mediation model is moderated by employees’ perceptions of autonomy, such that high autonomy perceptions strengthen mediation and low autonomy perceptions weaken mediation (Hypothesis 5a, 5b). Only for the coworker feedback environment model the indirect effect of coworker feedback environment perceptions on creativity level was conditional on values of autonomy, such that for high levels of autonomy the effect was significant and positive, for moderate levels it was insignificant and for low autonomy levels it was significant and negative. This also translated in a more pronounced positive and negative slope for the coworker feedback environment plot (Figure 2) than for the supervisor feedback environment plot (Figure 3).

Discussion

The present study contributes to the literature on the feedback-creativity relationship by highlighting employees’ perceptions of the broader feedback environment as a new avenue for enhancing employee creativity. Our results indicated that employees’ perceptions of a favorable coworker or supervisor feedback environment indirectly influence their level of creative performance through the internalization of work goals. In addition, we found that autonomy moderated this
mediation, such that the more autonomy employees experienced at work, the stronger this relationship was.

The present study extends previous research in several ways. First, our finding that employees’ perceptions of the broader feedback environment indirectly influence their creative performance highlights the relevance of studying the more aggregate psychological feedback context within the creativity domain. Traditionally, literature on the feedback-creativity relationship has focused on the effect of specific feedback components, such as feedback valence and feedback delivery, on creative performance (George & Zhou, 2001; Zhou, 1998, 2003; Zhou & George, 2001). The results of this study show that it is important to go beyond this approach and consider the effects of the more comprehensive feedback environment that surrounds employees and which is characterized by effective and well-construed feedback exchanges and provides employees with high-quality feedback from readily available and credible coworkers or supervisors. The shift of the present study towards a more comprehensive conceptualization of feedback is in line with a recent trend within the feedback literature, which increasingly looks at the broader psychological feedback context in which feedback interventions take place (e.g., Anseel & Lievens, 2007; Ashford & Northcraft, 2003; Herold & Parsons, 1985; Levy & Williams, 2004; Steelman et al., 2004). The finding that a supportive, favorable and stimulating feedback environment is a way to enhance employee creativity also fits well with previous research demonstrating the importance of a supportive and stimulating environment for creative performance (Amabile & Conti, 1999; Madjar et al., 2002; Oldham, 2003; Zhou, 2003).

Second, by incorporating coworkers as well as supervisors as important feedback sources, our study recognized and found support for the importance of coworker feedback with regard to creative performance. By showing that employees’ perceptions of a favorable coworker feedback environment stimulate them to be creative throughout their goal striving, this study not only contributes to the feedback-creativity literature, which has primarily focused on supervisor feedback and feedback as a generic construct (George & Zhou, 2001, 2007; Zhou, 1998, 2003), but also provides indirect empirical support for prior research highlighting the importance of coworkers in the workplace (Chiaburu & Harrison, 2008; Higgins & Kram, 2001).

Third, our results add to the creativity literature by identifying self-concordance as a mediating mechanism between perceptions of a favorable coworker or supervisor feedback environment and creative performance. While prior theorizing within the creativity and the feedback-creativity domain has focussed on intrinsic motivation as a motivational mechanism between contextual factors and creative performance (Shalley et al., 2004), empirical research on the mediating role of intrinsic
motivation has yielded inconsistent results (Shalley & Perry-Smith, 2001; Shin & Zhou, 2003; Zhang & Bartol, 2010). In response to these inconsistent results, Shalley and colleagues (2004) suggested that contextual characteristics may not only affect creativity via intrinsic motivation, but also via a number of alternative mechanisms. The present study indicates that self-concordance, which provides a more balanced view on motivation, can be such an additional mechanism. In addition, our findings also provide further support for Bono and Judge’s (2003) findings that contextual factors, such as a favorable feedback environment, influence the extent to which individuals perceive their work activities to be aligned with their authentic interests and values, and that when individuals do have such perceptions, they are likely to display a higher level of creativity throughout their goal striving.

Finally, by introducing autonomy as a moderator of the mediated feedback-creativity relationship, this study sheds light on an important boundary condition to strengthen the relationship between feedback and creativity. While these findings are in line with previous research by Zhou (1998), our model extends beyond that of Zhou, in that we examined autonomy as a moderator to the mediated relationship between coworker or supervisor feedback environment, self-concordance and creative performance rather than as a moderator to the direct relationship between feedback and creativity. As hypothesized, the highest level of self-concordance was found for the favorable feedback environment and high autonomy condition. Somewhat surprisingly however, the favorable feedback environment and low autonomy condition yielded the lowest level of self-concordance in both the supervisor as the coworker feedback environment model. Thus, while previous research indicates that autonomy to act upon feedback is essential for feedback to be motivational (e.g., Dodd and Ganster, 1996; Ilgen, Fisher, & Taylor, 1979), our results suggest that providing feedback to employees that don’t have the latitude to act upon it, can even be detrimental for motivation. In order to explain this finding, we build on previous theoretical suggestions (e.g., Ilgen, Fisher, & Taylor, 1979) in proposing that even high-quality feedback considerately delivered by credible and available coworkers and supervisors might create feelings of control, pressure, work demands and a consequent decrease in motivation if employees do not have the discretion to respond to this feedback adequately. In other words, when employees work in a low autonomy condition they cannot easily make use of the favorable feedback environment that surrounds them, they cannot apply the advice provided by coworkers or supervisors, nor react to the expectations signaled by the feedback they receive. This lack of autonomy might in fact not only prevent employees from taking ownership of their goals and integrate them into themselves, but this might also create frustration and increases the feeling that one lacks personal control, resulting in lower levels of self-concordance. In emphasizing this lack of control to act upon suggestions in the environment, the
situation of high feedback-low autonomy might thus be more detrimental than the low feedback-low autonomy condition. Indeed, while employees in the latter condition don’t have the latitude to act upon feedback either (low autonomy), they get far less signals directing them (low feedback), signaling expectations in a certain direction and necessitating personal control.

Limitations and Avenues for Future Research

The results of the present study need to be considered in the light of several study limitations. First, all data were collected using a survey methodology, so common-method biases may have confounded our results. However, as we collected measures of our predictor and outcome variables from different sources, the effects of consistency motifs, implicit theories and social desirability are somewhat reduced (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Our methodology also leaves open the possibility that the effects found were spurious. To reduce the likelihood of this issue, we followed the advice of Rogelberg (2002) and formulated our model based on explicit theory in the self-determination and creativity literatures. In addition, we incorporated a number of control variables to reduce the likelihood of spurious effects. However, in order to completely rule out this possibility, models tested over time are needed.

Second, this study used only a restricted number of antecedent variables to explain employees’ level of creative performance (i.e., coworker feedback environment, supervisor feedback environment, self-concordance and autonomy). Future research efforts might further our understanding with regard to the factors that impact creative performance by including relevant additional variables. For example, considering the increased interest in the interplay of personal and contextual characteristics (Shalley & Zhou, 2008; Shalley et al., 2004) it might be valuable to investigate how personal characteristics relevant to creativity, such as personality, cognitive style and creative role identity, interact with perceptions of the feedback environment. Indeed, prior research suggests that personal characteristics do influence the way individuals respond to contextual factors (Baer, Oldham, & Cummings, 2003; Tierney, Farmer, & Graen, 1999).

Third, as we used a cross-sectional research design, i.e., all data has been collected at one point in time, further research is needed to assess issues of causality. It may be that some of the relationships we found may operate in reverse. For example, it may be that a favorable feedback environment does not promote internalization of work goals, but that when employees pursue self-concordant work goals
and thus demonstrate high levels of ownership with regard to their work goals, supervisors and coworkers are more likely to provide them with well-construed and high-quality feedback and to be receptive and available when these employees seek feedback. In addition, they may provide these employees with more autonomy with regard to decision-making and work scheduling. In contrast, if employees are disinterested, supervisors and coworkers may be less willing to provide them with feedback and may do so in a less considerate or a more controlling way, restricting the autonomy of these employees. Given the cross-sectional character of our study, we are not able to test this hypothesis. Longitudinal research designs may overcome this limitation of our study.

Finally, this study used a sample from a single industry and a single job type, consulting. Future research will need to test whether our findings generalize to different types of knowledge or creative workers in different industries. However, the fact that creativity was not an explicit job demand to the employees in this sample and the use of broad measures in this study, suggests that generalization of results to a broader array of jobs might be warranted. Indeed, results indicate that when employees perceive a favorable coworker or supervisor feedback environment, they tend to display more creativity at work, even when the feedback they receive is not specifically about their creative performance and even when creativity is not explicitly defined as a work goal criterion.

Practical Implications

Our study echoes recent suggestions that organizations interested in stimulating employee creativity might profitably focus on developing work contexts that support it. As discussed by Shalley and Zhou (2008), such contexts may be developed by setting creativity goals, making creativity a job requirement and building reward systems that value employee creativity. Based on this study, supportive contexts should also be conducive to effective and well-construed feedback exchanges from credible and available coworkers and supervisors. Furthermore, providing employees with autonomy might further enhance the supportiveness of this kind of work contexts.

Our results also suggest that if creative performance is the organization’s goal, there is value in stimulating effective feedback exchanges beyond the traditional focus on the supervisor-employee relationship to consider feedback exchanges between coworkers.
Organizations may develop contexts that support creativity by training employees to give each other well-construed feedback and encouraging them to seek feedback from each other, rather than limiting themselves to supervisor-delivered feedback.

CONCLUSION

Our study breaks new ground in the creativity literature by highlighting the importance of employees’ perceptions of the feedback environment with regard to creative performance. The results indicate that organizations can enhance employees’ creativity by nurturing a favorable feedback environment in which supervisors as well as coworkers can be valuable feedback sources. In addition, the present study also unravels the way in which the relationship between feedback environment and creative performance is shaped. As a consequence, our conceptual model can be a steppingstone for scholars investigating creative performance in organizations as well as practitioners searching for ways to enhance employee creativity at work.


## Table 1

Means, Standard Deviations, Reliabilities and Correlations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Coworker Feedback Environment</td>
<td>3.72</td>
<td>.43</td>
<td>(.75)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Supervisor Feedback Environment</td>
<td>3.84</td>
<td>.56</td>
<td>.50**</td>
<td>(.85)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Self-Concordance</td>
<td>.84</td>
<td>1.07</td>
<td>.21**</td>
<td>.19**</td>
<td>(.70)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Creative Performance</td>
<td>3.06</td>
<td>.79</td>
<td>.12**</td>
<td>.13**</td>
<td>.15**</td>
<td>(.92)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Autonomy</td>
<td>3.79</td>
<td>.71</td>
<td>.25**</td>
<td>.24**</td>
<td>.23**</td>
<td>.31**</td>
<td>(.79)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6. Age</td>
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<td>14.8</td>
<td>-.20**</td>
<td>-.11*</td>
<td>-.05</td>
<td>-.16**</td>
<td>-.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Gender</td>
<td>-</td>
<td>-</td>
<td>.04</td>
<td>-.01</td>
<td>-.01</td>
<td>.07</td>
<td>.02</td>
<td>.18**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Degree</td>
<td>-</td>
<td>-</td>
<td>.10*</td>
<td>.09</td>
<td>.06</td>
<td>.20**</td>
<td>.16**</td>
<td>-.22**</td>
<td>.06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Job tenure</td>
<td>2.74</td>
<td>1.70</td>
<td>-.15**</td>
<td>-.06</td>
<td>-.07</td>
<td>-.14**</td>
<td>-.01</td>
<td>.67**</td>
<td>.15**</td>
<td>- .29**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10. Work experience</td>
<td>11.8</td>
<td>8.65</td>
<td>-.12*</td>
<td>-.08</td>
<td>.00</td>
<td>-.10</td>
<td>-.02</td>
<td>.75**</td>
<td>.10</td>
<td>-.25**</td>
<td>.47**</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: The diagonal values in parentheses represent the alpha-reliability coefficients. * p < .05; ** p < .01
### TABLE 2

Hierarchical Regressions for the Impact of Coworker Feedback Environment and Self-Concordance on Creative Performance

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Self-concordance</th>
<th>Creative performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Predictors</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 1:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.02</td>
<td>.01</td>
</tr>
<tr>
<td>Gender</td>
<td>-.01</td>
<td>-.03</td>
</tr>
<tr>
<td>Degree</td>
<td>.02</td>
<td>.00</td>
</tr>
<tr>
<td>Job tenure</td>
<td>-.04</td>
<td>-.03</td>
</tr>
<tr>
<td>Work experience</td>
<td>-.02</td>
<td>-.04</td>
</tr>
<tr>
<td><strong>Step 2:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coworker feedback environment</td>
<td>.21**</td>
<td></td>
</tr>
<tr>
<td><strong>Step 3:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-concordance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.00</td>
<td>.04</td>
</tr>
<tr>
<td>$R^2$ Change</td>
<td>.04</td>
<td></td>
</tr>
</tbody>
</table>

Note: * $p < .05$; ** $p < .01$; Values are standardized coefficients
<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Self-concordance</th>
<th>Creative performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predictors</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Step 1:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.02</td>
<td>-.01</td>
</tr>
<tr>
<td>Gender</td>
<td>-.01</td>
<td>-.01</td>
</tr>
<tr>
<td>Degree</td>
<td>.02</td>
<td>.00</td>
</tr>
<tr>
<td>Job tenure</td>
<td>-.04</td>
<td>-.04</td>
</tr>
<tr>
<td>Work experience</td>
<td>-.02</td>
<td>-.04</td>
</tr>
<tr>
<td>Step 2:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisor feedback environment</td>
<td></td>
<td>.18**</td>
</tr>
<tr>
<td>Step 3:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-concordance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.00</td>
<td>.03</td>
</tr>
<tr>
<td>R² Change</td>
<td></td>
<td></td>
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</tbody>
</table>

Note: * p < .05; ** p < .01; Values are standardized coefficients
### TABLE 4

Coworker Feedback Environment - Regression Results of Moderated Mediation Analysis

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>SE</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mediator Variable Model</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>7.79</td>
<td>1.74</td>
<td>4.47</td>
<td>.00</td>
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<tr>
<td>Coworker feedback environment</td>
<td>-1.55</td>
<td>.48</td>
<td>-3.21</td>
<td>.00</td>
</tr>
<tr>
<td>Autonomy</td>
<td>-1.41</td>
<td>.45</td>
<td>-3.10</td>
<td>.00</td>
</tr>
<tr>
<td>Coworker feedback environment x Autonomy</td>
<td>.43</td>
<td>.12</td>
<td>3.50</td>
<td>.00</td>
</tr>
<tr>
<td>Supervisor feedback environment (cov)</td>
<td>.02</td>
<td>.08</td>
<td>2.11</td>
<td>.03</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>SE</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variable Model</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-1.33</td>
<td>1.64</td>
<td>-0.81</td>
<td>.42</td>
</tr>
<tr>
<td>Self-concordance</td>
<td>.10</td>
<td>.04</td>
<td>2.44</td>
<td>.02</td>
</tr>
<tr>
<td>Coworker feedback environment</td>
<td>.74</td>
<td>.45</td>
<td>1.65</td>
<td>.10</td>
</tr>
<tr>
<td>Autonomy</td>
<td>1.00</td>
<td>.42</td>
<td>2.33</td>
<td>.02</td>
</tr>
<tr>
<td>Coworker feedback environment x Autonomy</td>
<td>-.18</td>
<td>.11</td>
<td>-1.61</td>
<td>.11</td>
</tr>
<tr>
<td>Supervisor feedback environment (cov)</td>
<td>.06</td>
<td>.07</td>
<td>.84</td>
<td>.40</td>
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</table>

<table>
<thead>
<tr>
<th>Autonomy&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Boot indirect effect</th>
<th>Boot SE</th>
<th>Boot z</th>
<th>Boot p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.65 (CI: [-.22, -.02])</td>
<td>-.09</td>
<td>.05</td>
<td>-1.81</td>
<td>.07</td>
</tr>
<tr>
<td>2.36 (CI: [-.15, -.01])</td>
<td>-.05</td>
<td>.03</td>
<td>-1.70</td>
<td>.09</td>
</tr>
<tr>
<td>3.08 (CI: [-.08, .00])</td>
<td>-.02</td>
<td>.02</td>
<td>-1.29</td>
<td>.20</td>
</tr>
<tr>
<td>3.79 (CI: [-.01, .04])</td>
<td>.01</td>
<td>.01</td>
<td>.72</td>
<td>.47</td>
</tr>
<tr>
<td>4.51 (CI: [.01, .10])</td>
<td>.04</td>
<td>.02</td>
<td>1.83</td>
<td>.07</td>
</tr>
<tr>
<td>5.00 (CI: [.01, .16])</td>
<td>.06</td>
<td>.03</td>
<td>1.93</td>
<td>.05</td>
</tr>
</tbody>
</table>

Note: Bootstrap sample size = 5,000. Unstandardized regression coefficients are reported in line with recommendations of Preacher, Rucker and Hayes (2007).

<sup>a</sup> Range of values represent the conditional indirect effect at -3SD, -2SD, -1SD, mean, +1SD, +2SD of autonomy.
TABLE 5

Supervisor Feedback Environment - Regression Results of Moderated Mediation Analysis

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Mediator Variable Model</th>
<th>Dependent Variable Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>Constant</td>
<td>4.46</td>
<td>1.24</td>
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<td>Supervisor feedback environment</td>
<td>-.69</td>
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<tr>
<td>Autonomy</td>
<td>-.54</td>
<td>.32</td>
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<td>Supervisor feedback environment x Autonomy</td>
<td>.19</td>
<td>.08</td>
</tr>
<tr>
<td>Coworker feedback environment (cov)</td>
<td>.09</td>
<td>.10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Conditional effects and CIs at range of values of Autonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Autonomy&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>1.65 (CI: [-.12, .00])</td>
<td>-.04</td>
</tr>
<tr>
<td>2.36 (CI: [-.08, .00])</td>
<td>-.02</td>
</tr>
<tr>
<td>3.08 (CI: [-.05, .00])</td>
<td>-.01</td>
</tr>
<tr>
<td>3.79 (CI: [-.06, .00])</td>
<td>-.02</td>
</tr>
<tr>
<td>4.51 (CI: [-.00, .05])</td>
<td>.01</td>
</tr>
<tr>
<td>5.00 (CI: [-.00, .07])</td>
<td>.02</td>
</tr>
</tbody>
</table>

Note: Unstandardized regression coefficients are reported in line with recommendations of Preacher, Rucker and Hayes (2007). Bootstrap sample size = 5,000.

<sup>a</sup> Range of values represent the conditional indirect effect at -3SD, -2SD, -1SD, mean, +1SD, +2SD of autonomy.
FIGURE 1

![Diagram showing the relationships between Autonomy, Self-Concordance, Coworker Feedback Environment, Supervisor Feedback Environment, and Creative Performance.](image-url)
FIGURE 2

Interaction Effect of Coworker Feedback Environment and Autonomy on Self-Concordance
FIGURE 3

Interaction Effect of Supervisor Feedback Environment and Autonomy on Self-Concordance