INTERACTIVE EFFECTS OF GROWTH NEED STRENGTH, WORK CONTEXT, AND JOB COMPLEXITY ON SELF-REPORTED CREATIVE PERFORMANCE

CHRISTINA E. SHALLEY
Georgia Institute of Technology

LUCY L. GILSON
University of Connecticut

TERRY C. BLUM
Georgia Institute of Technology

We propose that “growth need strength” is an important individual factor for employees’ creative performance. Using an interactionist perspective, we examine the relationship between growth need strength and a supportive work context on self-reported creativity across a wide range of jobs that vary in complexity. Controlling for the effects of individual factors that have been previously linked to creativity (i.e., creative personality, intrinsic motivation, and cognitive style), we find that growth need strength has both a positive main effect on creativity and an interactive effect with context. Furthermore, job complexity moderates this association. Implications for managers are discussed.

The nature of work has dramatically changed over the last decade, reflecting greater global competition, job restructuring, and the flattening of organizational hierarchies. These changes have increased the need for creativity from workers at all levels and different types of jobs, including those that may not have traditionally required employees to be creative. Employees who are creative at work develop new and useful ideas, processes, services, or products (Amabile, 1996; Mumford & Gustafson, 1988). Innovation is the successful implementation of these creative ideas within an organization, so it is critical for some or potentially all employees to be creative at work to provide the raw material needed for change and innovation (e.g., Amabile, 1988; Kanter, 1988; Shalley, Zhou, & Oldham, 2004; Woodman, Sawyer, & Griffin, 1993). Given this, there has been a steady increase in research examining the individual and contextual factors that may facilitate employees’ creative performance (see Shalley et al. [2004] for a review). In the current research we seek to add to this literature by focusing on what we would argue is an important individual difference that has not been considered in relation to employees’ creative performance.

Specifically, we propose that an employee’s level of “growth need strength” influences his or her creativity. In addition, we consider under what conditions this construct has a stronger explanatory effect on employee self-reported creativity by examining the interactions with a supportive work context. Further, we argue that since jobs vary widely in complexity, researchers and managers need to consider how job complexity interacts with growth need strength and work context to affect creative performance.

The underlying premise of this work is that conceptually, growth need strength should be positively related to employees’ creative performance. This construct, developed in the job design literature (Hackman & Oldham, 1980), is a measure of an individual’s desire to grow and develop within his/her job. Individuals who score high on measures of growth need strength want to learn new things, stretch themselves, and strive to do better in their jobs. This study represents the first investigation into growth need strength in relation to employee creative performance.

To consider under what conditions growth need strength will be most explanatory for employees’ self-reported levels of creative performance, we examine the interaction between growth need strength and a supportive work context. Further, we propose that to better understand the drivers of employee creativity, it is important to examine the
nature of an individual’s job in concert with the individual and the context within which work is performed. As such, we build on and extend work by Scott and Bruce (1994) and Tierney and Farmer (2002), who found individuals scoring higher on certain individual differences linked to creativity responded differently to a work context supportive of creativity than did those who scored lower on these individual differences. By including job complexity in the equation with a supportive context and growth need strength, we hoped to better understand what can lead to higher self-reported creativity.

The current study of a large, representative sample of employed individuals working in various occupations, organizations, industries, and geographical locations in the United States was designed to make three unique contributions. First, we propose and provide the first empirical test of whether growth need strength has a positive association with employees being creative in their work, over and above the effects of other individual differences that have previously been associated with creativity (i.e., creative personality, intrinsic motivation, and cognitive style). Second, we examine the interactive effect of growth need strength and a supportive context on employees’ self-reported levels of creative performance. Finally, because the relationship between growth need strength and work context is considered across a broad range of jobs, we examine whether the dominant conceptual models (i.e., Amabile, 1983; Woodman et al., 1993) and most empirical work (e.g., Oldham & Cummings, 1996), which have predominantly focused on white-collar or professional jobs, apply more broadly to a wide spectrum of jobs that vary on complexity. This work represents the first research to theorize and empirically examine these issues together.

**THEORETICAL FRAMEWORK**

Amabile (1983) proposed that creativity is a product of certain constellations of individual and contextual factors. Specifically, since creativity ultimately results from individuals, their particular personalities, cognitive skills, and motivations are imperative considerations. However, the context in which a person works plays a critical role in the transference of creative potential into actual creative performance. Therefore, a predominant framework in the creativity literature is an interactionist perspective in which creativity is viewed as resulting from characteristics of the individual, the work context, and the interaction between the two (Amabile, 1988; Woodman et al., 1993). The central argument proposed in this framework is that individuals with certain attributes are most likely to value the rewards and opportunities provided by a supportive work context, and thus, they exhibit higher creativity when both are present.

Over the last decade, the interactionist perspective has begun to receive more theoretical and empirical attention (e.g., Madjar, Oldham, & Pratt, 2002; Ohly, Sonnentag, & Plunke, 2006; Shin & Zhou, 2003; Tierney, Farmer, & Graen, 1999; Zhou & George, 2001). Although each of these studies has examined the interactive effects of an individual attribute and work context on creativity, a range of different individual factors (e.g., creative personality, cognitive style, and intrinsic motivation) have been examined. Therefore, the effects of several individual attributes have not been considered together in the same data set or models.

**The Role of the Individual**

Creativity is a complex phenomenon that can have multiple influences (Mumford & Gustafson, 1988). Since creativity requires relatively demanding and intensive effort (Mumford, 2000; Shalley & Gilson, 2004), it is important to consider what causes people to want to invest in trying to be creative in their work. For many years, creativity research focused on identifying characteristics of individuals that are predictive of creative accomplishments (e.g., Barron & Harrington, 1981; Gough, 1979). In the present study, we propose that the effect of growth need strength—an individual’s desire to grow and learn in a job—should be considered when examining employees’ creativity. Specifically, we argue that much of the prior research has addressed the roles of global individual differences (creative personality and cognitive style), rather than job-specific individual differences. Thus, when considered within organizational contexts, this research has yielded some inconsistent and puzzling findings. For example, two studies (Oldham & Cummings, 1996; Zhou & Oldham, 2001) showed that rating high on creative personality and having a supportive supervisor interacted positively to affect employee creativity. On the other hand, Madjar and colleagues (2002) found that creative personality did not interact with supervisor/coworker support, and Zhou (2003) found that employees scoring low on creative personality measures exhibited higher creativity when creative coworkers were present and they had noncontrolling supervisors. Our goal here is to better understand the drivers of employee creative performance by adding growth need strength into the equation. Furthermore, since creativity is most likely influ-
enced by a combination of individual differences (Tierney et al., 1999), researchers need to consider more than one at a time. Therefore, while examining growth need strength, we also control for other individual differences that have been theorized and empirically examined in relation to creativity.

In this research, we examine what effect growth need strength has over and above the influence of creative personality, intrinsic motivation, and cognitive style, which are all relatively well established individual differences associated with creativity. For example, the effect on creative performance of having a creative personality has been documented (e.g., Feist, 1998, 1999; Gough, 1979; Oldham & Cummings, 1996; Zhou & Oldham, 2001). Here, researchers have identified a set of personality traits (e.g., broad interests, self-confidence, and tolerance for ambiguity) that are reasonably stable and result in some individuals being more creative than others. Also, a number of theorists have hypothesized that intrinsic motivation—the extent to which individuals are internally motivated and feel a personal satisfaction when they do a job well—is important for creativity (e.g., Amabile, 1983; Crutchfield, 1962). Intrinsic motivation has been found to be predictive of creativity on artistic tasks (Amabile, 1979) and for R&D professionals (Amabile & Gryskiewicz, 1989). Finally, cognitive style has been cited as important for individual creativity because it is an individual’s natural orientation or preferred means of problem solving (Jabri, 1991). Research has examined different dimensions of cognitive style as antecedents to creativity and innovation (e.g., Barron & Harrington, 1981; Jabri, 1991; Kirton, 1976; Scott & Bruce, 1994).

We consider growth need strength to be an important explanatory variable to add into the creativity equation because performing creatively at work requires some internal, sustaining force that drives individuals to push themselves and persevere in the face of challenges, inconsistent findings, and performance pressures. According to Hackman and Oldham (1980), employees differ in their need to grow and develop within their jobs. Therefore, one factor that seems to be conceptually relevant to creativity is an individual’s internal need to strive and learn at work. Growth need strength indicates employees’ internal expectations and desires for what they will obtain from their work. Specifically, employees with higher growth need strength tend to value personal development and learning and thus enjoy more stimulating and challenging work (Bottger & Chew, 1986; Spector, 1985). Individuals with high growth need strength are those who seek to learn and want to exercise independent thought and action at work, and those lower in growth need strength are less personally interested in opportunities for growth and development in their jobs. Further, we expect this variable to be positively related to creativity because high growth need strength will cause individuals to have more of a learning orientation (that is, an emphasis on developing and improving knowledge, skills, and competence). Janssen and Van Yperen (2004) found that a learning goal orientation was positively associated with innovative job performance, which was defined as the intentional generation, promotion, and realization of new ideas at work. To date, no research that we are aware of has examined the relationship between growth need strength and creativity. However, growth need strength has been found to be related to openness to experience (de Jong, van de Velde, & Jansen, 2001), an individual difference that has been linked to creativity (George & Zhou, 2001; McCrae, 1987).

Although growth need strength has not been examined in relation to creative performance, the psychological needs of people have been hypothesized to be critical to how they respond to their work (Hackman & Oldham, 1975). Growth need strength is generally defined as the need or desire to obtain growth from one’s work, and when this need is fulfilled it can result in “growth satisfaction” (Hackman & Oldham, 1975). Creativity has been described as a means of fulfilling positive higher-order needs. For example, Gedo (1983) argued that the desire to master one’s environment may drive creativity. In studies of the most eminent and creative scientists, it has been found that they are more driven and ambitious than their less eminent peers (Feist, 1991).

Employees should differ in their level of growth need strength, particularly when individuals working in a broad range of jobs are examined. In the current economy, “knowledge work” has grown, and it has been suggested that to some degree, creativity is possible in any job (e.g., Shalley, Gilson, & Blum, 2000; Unsworth, Wall, & Carter, 2005). Some employees have stronger needs for learning and personally accomplishing things at work; others have weaker needs. It could be that on some tasks, working harder and faster is enough to boost performance but not enough to deliver feelings of personal growth and development. In other words, employees differ in their need to ensure that they are getting “more” out of their jobs. For many, continually looking for new and better ways to do their work is fulfilling, but the definition of “new and better” will vary greatly depending on both job and employee. Therefore, we would expect that across jobs, employees who have high growth need strength are more likely to be creative in their work.
It should be mentioned that growth need strength and intrinsic motivation are related but conceptually distinct. For example, individuals with high growth need strength want to learn new things, stretch themselves, and strive to do better in their jobs. Individuals with high intrinsic motivation are inherently interested in their work and experience enjoyment and satisfaction from working on their tasks. Growth need strength and intrinsic motivation are distinct individual factors in that for some tasks, individuals may have an internal, personal drive to strive, learn, and grow (growth need strength is high) and yet, they may not particularly enjoy working on the tasks (intrinsic motivation is low). Thus, different individual factors can operate at different times, and it is important to examine the effect of each on creative performance.

In summary, prior research has shown that people with high growth need strength do not wait for opportunities to come to them; rather, they actively look for opportunities to fulfill their desire for growth and development (e.g., Blau, 1989; Huselid & Day, 1991). Conversely, those with lower growth need strength are not looking for challenges and may not recognize or want to recognize the existence of such opportunities; rather, they may see the behaviors creativity requires as demands on their time and undesirable in general. Therefore, since creativity requires a complex thought process (Simon, 1985), if individuals possess higher levels of growth need strength, they should be more likely to seek out opportunities to stretch themselves and be more apt to work harder to be creative.

Hypothesis 1. With the effects of creative personality, intrinsic motivation, and cognitive style controlled for, growth need strength positively affects self-reported creative performance.

The Moderating Role of Work Context

Research indicates that employees need a work context that supports and encourages their creative efforts (Andrews, 1975; Pelz, 1956; Scott & Bruce, 1994; Taylor, 1963, 1972). Much of the prior interactionist work that examines components of a supportive context has primarily focused on one aspect of work context—relationships with supervisors or coworkers (e.g., Madjar et al., 2002; Oldham & Cummings, 1996; Tierney & Farmer, 2002). Although relationships at work are an important component of context, other factors could also affect creative performance, such as tolerance of diversity, protection from distractions, and the provision of adequate time and resources (Amabile, 1988; Mumford, 2000; Scott & Bruce, 1994; Taylor, 1963).

Given this, we follow the lead of Siegel and Kammemer (1978), Scott and Bruce (1994), and Zhou and George (2001), among others, and broadly define organizational support for creativity as employees’ perception that their organization encourages, rewards, and recognizes creativity. In other words, a supportive context is one where employees perceive that the environment within which they work encourages, recognizes, respects, and rewards those who exhibit creativity.

From an interactionist perspective, we would expect that growth need strength and a supportive work context should work together to affect creativity. Specifically, when individuals have high growth need strength, so that they have the internal drive to develop and learn in their jobs, and they work in a context that is supportive of creativity, creative performance should be enhanced. Individuals with high growth need strength should be more likely to take advantage of opportunities when their work context supports, values, and rewards these types of initiatives. In contrast, we would expect those with low growth need strength and a context that is not supportive of creativity to have relatively low levels of creativity. Furthermore, since the psychological needs of employees can be critical in determining how they respond to their work context, when individuals have a strong need for personal growth and accomplishment, learning, and development they may attempt to initiate behaviors that will lead to creative performance, even when the work context is not supportive. On the other hand, when employees have low growth need strength and are less eager to exploit opportunities for personal growth and accomplishment, they may not appreciate a work context that is supportive of creativity, but it may stretch them to do things they are less eager to do. If this is the case, a supportive context may encourage creative performance for those with low growth need strength, even though they may not value the supportive environment. Therefore, we would expect only moderate levels of creativity when individuals are have high growth need strength but their work context is less supportive of creativity or when the context is supportive but individuals have low growth need strength.

Hypothesis 2. Supportive work context moderates the relationship between self-reported creativity and growth need strength: the relationship between growth need strength and creativity is stronger in more supportive contexts. The highest levels of creativity are expected when both growth need strength and supportive context are high, and the lowest levels are expected when both are low. Mod-
erate levels of creativity are expected when growth need strength is high and context is nonsupportive or when growth need strength is low and context is highly supportive.

The Moderating Role of Job Complexity

Our final proposition is that to better understand the drivers of employee creativity it is important to examine the nature of a job in concert with the nature of the individual who is performing the work and the context within which the work is performed. Inherently, the level of creativity required or possible in any job may be dependent on the job in question. It has been suggested that creativity exists on a continuum, with creative activities ranging from minor adaptations to major or radical breakthroughs (e.g., Mumford & Gustafson, 1988; Steiner, 1965). Nevertheless, in some jobs, individuals are less likely to need to perform creatively to accomplish their tasks, whereas in other jobs, creativity is both highly desirable and critical for effective functioning. Previous work suggests that the way a job is designed may be a proximal and stable work environment characteristic that contributes to employees’ job required creativity (Shalley et al., 2000). In addition, job-required creativity has been found to predict team creative performance (Gilson & Shalley, 2004).

One way in which jobs vary is in their level of complexity. Substantive job complexity, the extent to which a job entails autonomy or less routine and the extent to which it allows for decision latitude, has been shown to be related to intellectual flexibility and openness to new experiences (Kohn & Schooler, 1983). Complex jobs are multifaceted, and by their nature they encourage employees to combine knowledge from various sources. Farr (1990) suggested that complex jobs require more intricate thought processes than do simpler jobs. Others have argued that more complex jobs require flexibility and allow incumbents the opportunity to use advanced cognitive faculties and processes (Campbell, 1988; Tierney & Farmer, 2002).

Building on the work of Tierney and Farmer (2002) as well as Scott and Bruce (1994), we propose that it is important to examine the moderating role of job complexity in the relationship between an individual difference variable and a supportive context for creative performance across a wide spectrum of jobs that exist in our economy. For example, Tierney and Farmer (2002) found a positive relationship between job complexity and creativity, leading them to suggest that designing jobs to be multifaceted and to require flexibility and experimentation promotes creative self-efficacy among employees. Most relevant here, these researchers also found that the antecedent pattern for creative self-efficacy differed between their two samples, one white-collar and one blue-collar. This difference led them to conclude that creativity models may not generalize across jobs of different types or jobs with different complexity levels. However, given that they had collected two separate samples, they were unable to test for these differences in their data. This suggests that future research is called for. Furthermore, they pointed out that much of the prior creativity research had been constrained to contexts in which creativity is expected (e.g., science, art, R&D), and therefore, more likely to be supported. This point highlights a bias in the literature that could result in a body of knowledge that does not generalize across all jobs.

Scott and Bruce (1994) did explore whether type of job assignment moderated the relationship between innovative behavior and each of their hypothesized predictors. Their results only indicated moderation for task type between leader role expectations and innovative behavior for technicians. However, since their data were collected in an R&D facility, they were only able to compare two job groups, engineers and scientists versus technicians. Since the jobs of scientists and engineers can range in complexity, grouping science and engineering jobs together may not reveal a fine enough differentiation. Therefore, we build on these works to extend the examination of whether job complexity moderates the association between growth need strength and a supportive work context in a wide range of jobs.

Job complexity has been found to be related to creative performance (Amabile, 1988; Oldham & Cummings, 1996), yet it has not been examined in association with growth need strength and work context. We expect, however, in relation to the above issues, that employees who work in complex jobs are more likely to perform creatively, depending on the combination of growth need strength and a supportive context, than those in less complex jobs. More specifically, job complexity should amplify the interactive effects of growth need strength and a supportive context on creative performance. The challenges for individuals who work in complex jobs may require them to draw upon both their internal attributes and external (work context) resources to be creative. For example, individuals with high growth need strength may perform more creatively when they work in a supportive context and have a job that is structured so as to require decision latitude (i.e., job complexity). However, those with low growth need strength may seek to avoid the frustrations stemming from the demands...
of more complex jobs when their work context is neither supportive nor encouraging of creativity. Individuals who work in complex jobs and who can draw on higher levels of growth need strength, especially in work settings that are supportive, should have a “perfect” combination of individual and contextual factors. Furthermore, the combination of factors may be more beneficial for creative performance than their additive effects, as they result from employees who seek opportunities, relish contextual support, and have jobs that are not overly structured or routine.

Given the above, individuals with high growth need strength in supportive contexts will still seek out creative opportunities, even when their jobs are not complex, but to a lesser extent than they will when their jobs are conducive to such seeking through complexity. Also, individuals with high growth need strength will seek out opportunities to grow and act creatively in complex jobs even when they are not encouraged by their work context to perform creatively. In this situation, complexity can substitute for the lack of support by augmenting high growth need strength with job-related opportunities to fulfill growth desires. Conversely, those with high growth need strength in routine, tightly supervised jobs may have higher levels of frustration and ultimately less creative performance because the nature of their work does not allow these individuals to develop, and this limitation is exacerbated when the context is also not conducive to creativity. This situation will result in relatively lower levels of creative performance that “perfectly squander” the potential of growth need strength for creativity. In contrast, those low in growth need strength will be frustrated in highly complex jobs, but will be contextually pulled (“a perfect pull”) to engage in intermediate levels of creative performance when the context is supportive of creativity. Those with complex jobs and lower levels of growth need strength to draw upon in a nonsupportive context will exhibit lower levels of creative performance because the internal and external factors that are needed to support the realization of creativity in complex jobs are lacking. Unlike the situation in which all three factors (growth need strength, contextual support, and job complexity) are commensurately and relatively low, and creativity is expected to be low, this incongruous environment will likely yield more frustration and a greater management challenge.

**Hypothesis 3.** There is a three-way interaction between growth need strength, a supportive context, and job complexity in explaining self-reported creativity: The highest levels of creativity are expected when growth need strength, supportive context, and job complexity are all high. Because of their stronger expected association with creativity, relatively high levels of creativity are expected when growth need strength is high and context is supportive, even if job complexity is low. Moderate levels of creativity are expected when growth need strength is high, support is low, and jobs are complex, and when both supportive context and complexity are high but growth need strength is low. Reduced levels of creativity are expected when only one factor is high, such as when growth need strength is high, but both context and complexity are low, and when growth need strength is low, contextual support is high, and complexity is low. The lowest levels of creativity are expected when growth need strength, context, and complexity are all low, and when jobs are complex but accompanied by low growth need strength and a nonsupportive context.

**METHODS**

**Participants and Procedures**

The data for this study are from a national telephone survey conducted using a probability sampling procedure and random digit dialing. The survey was conducted by a survey research center housed at a large university in the southern United States. Eligible participants were individuals who were at least 18 years of age and worked for pay at least 30 hours per week. To ensure a representative range of participants, we asked to speak to the individual in the household with the most recent birthday who fitted the above criteria. Complete interview data were obtained from 1,465 individuals, yielding a response rate of 61.4 percent. Of the respondents, 49 percent were male and 83 percent were Caucasian; the average age was 39 years (range 18–68 years); the average organizational tenure was 8 years (s.d. = 8.29); and the average job tenure was 4.5 years (s.d. = 5.82). Comparisons to the U.S. Bureau of Labor Statistics Census indicated that our respondents were demographically similar to the employed population of adults in the United States.

An extensive structured survey asked participants questions about their jobs, organizations, and psychological well-being. The measures used in this research were embedded throughout the survey so as not to prime participants regarding any of our constructs of interest. For example, the creative
performance questions were asked before any of our predictors, and the negative affect questions (control variable) were the final ones on the survey.

**Dependent Variable**

**Self-reported creative performance** was measured with three items developed by Oldham and Cummings (1996). The items (α = .78) asked individuals to rate the level of creativity and originality in the work that they produced. Specifically, the questions asked how strongly they agreed with each of the following statements: “The work I produce is creative,” “The work I produce is original,” and “The work I produce is novel.” Responses were coded using a Likert-type scale ranging from 1, “strongly disagree,” to 4, “strongly agree.” We selected this measure because of its good fit with our sampling methodology. Prior work (e.g., Scott & Bruce, 1994) has developed creativity measures in conjunction with organizations where data are being collected and therefore, the measure is often organization-specific. This type of measure was not appropriate for a national telephone survey that was done so as to obtain a large, diverse sample representative of the general population and crossing a broad spectrum of occupations. In addition, it was not feasible to have supervisors rate employee creativity since our methodology assured participant anonymity and there was no reasonable way to follow up and match individuals. That said, although self-reported measures are subject to bias, they have been found to correlate (.62) with supervisory ratings of creativity (Axtell, Holman, & Unsworth, 2000), and it has been argued that employees are best suited to self-report creativity because they are the ones who are aware of the subtle things they do in their jobs that make them creative (Janssen, 2000).

**Independent Variables**

**Growth need strength** was assessed with six questions from a scale from Hackman and Oldham (1980; α = .88) in which the following options follow the stem: “Considering all the things that are personally important to you in a job, how important is it to you to have a job with . . . ”: “stimulating and challenging work,” “chances to exercise independent thought and action,” “opportunity to learn new things,” and “opportunities for personal growth and development” (1, “not at all important,” 2, “somewhat important,” and 3, “very important”).

A **context supportive of creativity** was measured with seven items (α = .83) adapted from prior research subscales that have measured climates supportive of creativity (e.g., Scott & Bruce, 1994; Siegel & Kaemmerer, 1978). These questions asked whether creativity was recognized and valued in a respondent’s organization, whether adequate time and resources were available to pursue creative ideas, and whether creative ideas were praised and rewarded. Specific items included are, “In my organization, creative work receives appropriate recognition and praise” and “I have sufficient access to the necessary facilities and resources to do my job” (1, “strongly disagree” to 4, “strongly agree”). Since prior context measures have either been less broad—for instance, George and Zhou (2002) used only two items tapping rewards and promotion—or have shown that context loads onto multiple dimensions (Scott & Bruce, 1994), we conducted a factor analysis. Using varimax rotation, we extracted one factor with an eigenvalue greater than 1.0 accounting for 64.48 percent of the variance, and all seven items loaded onto this single factor at .57 or higher.

**Job complexity** is a latent construct assessing degree of decision latitude, autonomy, and nonroutine work. The survey research staff coded it using the *Dictionary of Occupational Titles* (*DOT*; Roos & Treiman, 1980)1 substantive complexity score. To ascertain an individual’s job complexity score, they asked participants, “[What] is your main occupation?” The verbatim answers were entered onto a hard copy of the survey and handed over to trained staff at the research center. Survey research staff members were graduate students trained in government data categories and their definitions. On the basis of the response to the open-ended question, two different people assigned a three-digit occupational code, and a participant’s job was considered coded when there was agreement. When there was disagreement, the professor in charge of the survey center, who was not associated with any of the research for which the data were being collected, was brought in to review the issue. When a consensus could still not be reached, the professor and coders looked at other information on the data collection to see if they could glean any more information. When necessary, more general codes were used rather than the detailed ones. In general, the matching was fairly straightforward, as responses were along the lines of “first-shift cashier,” “teach-
er’s assistant,” “bookkeeper,” and because this center had been involved in this sort of coding for over ten years at the time of data collection. Finally, supervisors randomly checked a percentage of all coding to ensure accuracy and agreement between coders.

A composite measure of job complexity can be obtained by matching the three-digit occupational codes to the DOT substantive complexity measures. The DOT handbook, developed by job analysts at the United States Department of Labor, assigns to each job code a number of occupational measures that describe the typical functions performed by an individual in that job along with the functional requirements of the job. Although the DOT data are general in scope, in test-retest reliability studies they have been found to be valid and representative of different jobs (Xie & Johns, 1995). Substantive complexity, as outlined by the DOT, is a measure of whether jobs are autonomous in nature, whether the work is routine, and whether they allow for decision latitude. Prior research has shown this composite to be reflective of a job function (Roos & Treiman, 1980) and to be related to a variety of psychosocial outcomes (e.g., Kohn & Schooler, 1983).

The DOT score was further compared to employees’ self-reports of job complexity measured via Hackman and Oldham’s (1980) motivating potential score (MPS); the median alpha of all components was .68. We calculated the MPS using the established formula (MPS = [variety + identity + significance]/3 × autonomy × feedback). Prior research has shown that the DOT measure of substantive complexity and the MPS are related both to employee creativity (Shalley et al., 2000; Tierney & Farmer, 2002) and to one another (Oldham & Cummings, 1996). In our data, the MPS and DOT measures were significantly correlated with one another (r = .68, p < .001). Therefore, for our analysis we elected to use the DOT measure of complexity, as it is an established non-self-report index of overall job complexity.

Controls

Creative personality was measured with the Creative Personality Scale (Gough, 1979), which is an adjective checklist developed to assess core personality characteristics that are believed to be correlates of creativity. This scale has been widely used and is a well-respected measure (e.g., McCrae, 1987; Oldham & Cummings, 1996). Traditionally, individuals are presented with a list of adjectives that describe creative (e.g., “inventive,” “informal,” “confident”) versus less creative people (e.g., “cautious,” “suspicious”) and asked to check those that best describe themselves. The values are then summed into an index. Since this format is not possible with a telephone survey, in which each question has to be read and the whole range cannot be seen at one time, and in view of our pilot data, we asked respondents to rate the extent to which they believed each of ten items could be accurately used to describe them using a response scale ranging from 1, “strongly disagree,” to 4, “strongly agree” (α = .79).

To calculate our scale, we reverse-coded the adjectives that describe less creative people.

Intrinsic motivation was assessed with three items from Warr, Cook, and Wall’s (1979) established measure of intrinsic job motivation (α = .70). This measure examines how individuals feel personally about their present jobs rather than work in general or their state/trait motivation and is thus comparable to the internal work motivation component of the Job Diagnostic Survey (Hackman & Oldham, 1980). The questions ask whether individuals feel personal satisfaction when they do their job well. Items include, “I take pride in doing my job as well as I can,” “I feel a sense of personal satisfaction when I do my job well,” and “I feel unhappy when my work is not up to my usual standard” (reverse-coded). Responses were coded on a scale ranging from 1, “strongly disagree,” to 4, “strongly agree.”

Associative cognitive style was measured with five items from Jabri’s (1991) index (α = .83). These items have been described as having good content validity and provide a reliable self-rating of a preference for a systematic, methodical, consistent approach to problem solving, and as such, are negatively related to creativity (Jabri, 1991; Scott & Bruce, 1994). Participants were asked the extent of their agreement with the statements “I am consistent in the way I tackle problems,” “I pay attention to the order of the steps needed to finish a job,” and “I accept the usual way of doing things” (1 = “strongly disagree,” to 4, “strongly agree”).

Negative affectivity was controlled for in all of our analyses to ensure that an individual’s affective state could not be used as an alternative explanation (Brief, Burke, George, Robinson, & Webster, 1988). Negative affect was measured with the 7-item short form (α = .94) summated scale from the Center for Epidemiological Studies of Depression (Mirowsky & Ross, 1990) that asks respondents

2 We ran our analysis using both the DOT measure of substantive complexity and the MPS and the results were essentially the same. The results for MPS are available from the authors on request.
to report how many days in the last week (0–7) they have experienced any of a number of affective states (e.g., “sad,” “lonely,” “blue”). The short form has been shown to correlate .92 with the 20-item long form (Mirowsky & Ross, 1990).

**ANALYSIS**

**Factor Analyses**

Prior to testing our hypotheses, we conducted an exploratory factor analysis (EFA) using principal axis factoring to ascertain whether our items loaded onto common latent factors. We entered all our survey measure items (creative performance, growth need strength, context supportive of creativity, creative personality, intrinsic motivation, and associative cognitive style) into the analysis and, with varimax rotation, six factors with eigenvalues greater than 1.0 emerged. A Harmon one-factor test was run to ensure that common method variance would not account for our findings. Our control variables (negative affect, creative personality, intrinsic motivation, associative cognitive style), predictors (growth need strength and supportive context), and self-reported creativity measure failed to converge onto a single factor.

To check the measures’ convergent and discriminant validity, we conducted a number of confirmatory factor analyses (CFAs), using the survey items noted above as indicators for all measures except for creative personality; for the latter, we used two substantively based item parcels because the items themselves are all single adjectives and as such are less reliable as single indicators of a latent construct (Hall, Snell, & Foust, 1999; Landis, Beal, & Tesluk, 2000). The parcels themselves represent the items that load on to positive and negative correlates with creativity. To assess model fit, we report the comparative fit index (CFI) and the standardized root mean square residual (SRMSR). Some debate surrounds cutoff scores for model fit; we considered CFI values < .90 and SRMSR values > .10 as deficient, CFI values from ≥ .90 to < .95 and SRMSR values from > .08 to ≤ .10 as acceptable, and CFI values from ≥ .95 and SRMSR < .08 as excellent (Hu & Bentler, 1999; Mathieu & Taylor, 2006).

Our six-factor CFA model yielded excellent fit indexes ($\chi^2[160] = 509.66$, $p < .001$; CFI = .96; SRMSR = .03). All indicators exhibited significant ($p < .01$) relationships with their intended latent variable. Next, we fitted a null latent CFA model with all items loading onto a single latent variable, obtaining exceedingly poor fit indexes ($\chi^2[230] = 2,575.82$, $p < .001$; CFI = .53; SRMSR = .17). Additionally, we tested two alternative models to ensure that our self-report criterion was discriminable from two of our predictors, creative personality and associative cognitive style, which are the predictors in our model that would be most likely to influence self-reports of creativity. First, we combined creative performance and creative personality as one factor and next, we combined creative performance with associative cognitive style. In both cases, the six-factor original model evidenced better fit indexes than either of the five-factor models. Together, these results allow us to rule out many of the threats associated with self-report criterion measures and lend further assurance as to the robustness of our factor structure and model.

Finally, we conducted a CFA for the items used to measure growth need strength and intrinsic motivation. Here, the two-factor model showed excellent fit indexes ($\chi^2[13] = 87.51$, $p < .001$; CFI = .96; SRMSR = .04) and yielded a significantly better fit than the single-factor model with all items mapped onto a single latent variable ($\chi^2[14] = 493.22$, $p < .001$; CFI = .61; SRMSR = .09). In the two-factor model, all items loaded significantly at the .001 level on their intended latent variables. Together, these results indicate that the scales do possess adequate discriminant and convergent validity for use in hypotheses testing.

**Correlation Analyses**

We compared our zero-order correlations with self-reported creativity to statistics from studies that have examined similar constructs and found that intrinsic motivation (Tierney et al., 1999), job complexity (Tierney & Farmer, 2002), and negative affectivity (George & Zhou, 2007) all had correlations that were very similar in size to those correlations reported using supervisory ratings of creativity. Second, given that our data are predominantly self-reported, prior to hypothesis testing we sought to minimize any concerns regarding potential sampling bias. We compared the occupations of our respondents with those of the population in general and found our sample to be highly representative. Further, within our data, the sex composition and race/ethnicity composition, as measured by the proportion of occupations, closely matched that of the U.S. Census. For our analysis, we excluded individuals whose occupation was farm worker or private household employee ($n = 38$), obtaining a final sample size of 1,430.

Even though none of our variables were highly correlated with one another, given that all but job
complexity were collected from a single source at one point in time, we conducted a test for multicollinearity. We reviewed the variance inflation factors (VIFs) after mean centering and prior to the calculation of the interaction terms. None of the VIF terms approached 10, and the mean of all the terms was less than 1, suggesting that multicollinearity was not a problem (Chatterjee & Price, 1991).

Hypothesis Testing

To test our hypotheses, we first regressed creative performance on negative affect, creative personality, intrinsic motivation, associative cognitive style, supportive work context, and job complexity. In our next step we entered growth need strength to determine the incremental variance attributable to that variable (Hypothesis 1). Next we computed the product term for the variables in our two-way interaction and entered it into the regression equation, to test the hypothesized relationship between growth need strength and supportive context (Hypothesis 2). Finally we computed the three-way interaction between growth need strength, supportive context, and job complexity and entered it into the equation (Hypothesis 3). Support for our hypotheses would require statistically significant increases in variance explained ($R^2$) with the addition of the two-way and three-way interactions and a pattern of results consistent with our hypotheses.

RESULTS

Descriptive statistics and zero-order correlations are presented in Table 1. Growth need strength ($r = .28, p < .01$) had a significant, positive association with self-reported creative performance. Also, in keeping with prior research, our data indicate that creative personality, intrinsic motivation, cognitive style, and supportive context are all significantly associated with self-reported creative performance in the expected directions. We begin the examination of our results with Hypothesis 3, our three-way interaction.

Step 4, Table 2, shows that the addition of the three-way interaction between growth need strength, work context, and job complexity increases the overall model $R^2$ by .04 ($p < .05$), suggesting that it is appropriate to examine the nature

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>s.d.</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>
</tr>
</thead>
<tbody>
<tr>
<td>1. Creative performance</td>
<td>3.21</td>
<td>0.63</td>
<td>.78</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Negative affect</td>
<td>1.03</td>
<td>0.75</td>
<td>-.07</td>
<td>.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Creative personality</td>
<td>2.29</td>
<td>0.33</td>
<td>.16**</td>
<td>-.07*</td>
<td>.79</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Intrinsic motivation</td>
<td>3.82</td>
<td>0.32</td>
<td>.30**</td>
<td>-.15*</td>
<td>.04</td>
<td>.70</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Associative cognitive style</td>
<td>3.07</td>
<td>0.35</td>
<td>-.23**</td>
<td>.07*</td>
<td>-.18**</td>
<td>-.23**</td>
<td>.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Supportive work context</td>
<td>3.00</td>
<td>0.60</td>
<td>.33**</td>
<td>.11*</td>
<td>.03</td>
<td>.12**</td>
<td>-.15**</td>
<td>.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Job complexity</td>
<td>4.12</td>
<td>1.09</td>
<td>.20**</td>
<td>-.01</td>
<td>.07*</td>
<td>.15**</td>
<td>-.11*</td>
<td>.20**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Growth need strength</td>
<td>2.85</td>
<td>0.25</td>
<td>.28**</td>
<td>-.01</td>
<td>.16**</td>
<td>.21**</td>
<td>-.30**</td>
<td>.12**</td>
<td>.13**</td>
<td>.88</td>
</tr>
</tbody>
</table>

$^a n = 1,430$. Values in parentheses are reliability coefficients.

$^* p < .05$

$^{**} p < .01$

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>Model F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative affect</td>
<td>.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creative personality</td>
<td>.14**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>.17**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associative cognitive style</td>
<td>-.07*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supportive work context</td>
<td>.23**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job complexity</td>
<td>.02</td>
<td>.21</td>
<td>.20</td>
<td>62.68**</td>
</tr>
<tr>
<td>Step 2: Growth need strength</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growth need strength</td>
<td>.18**</td>
<td>.22</td>
<td>.22</td>
<td>51.38**</td>
</tr>
<tr>
<td>Step 3: Moderation by supportive work context</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supportive work context $\times$ job complexity</td>
<td>.06*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growth need strength $\times$ supportive work context</td>
<td>.16**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growth need strength $\times$ job complexity</td>
<td>-.16**</td>
<td>.26</td>
<td>.26</td>
<td>43.73**</td>
</tr>
<tr>
<td>Step 4: Moderation by job complexity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growth need strength $\times$ supportive work context $\times$ job complexity</td>
<td>-.03*</td>
<td>.30</td>
<td>.28</td>
<td>39.86**</td>
</tr>
</tbody>
</table>

$n = 1,430$.

$^* p < .05$

$^{**} p < .01$
of this relationship. Using the procedure outlined by Aiken and West (1991), we plotted the high and low levels of each variable (one standard deviation above and below the mean). Figure 1 depicts the pattern of moderated results related to Hypothesis 3. The highest levels of expected self-reported creativity are observed when growth need strength, supportive context, and job complexity are high. This figure also shows that when growth need strength and context are both high, but job complexity is low, levels of creativity are also high. The more moderate expectations for two further combinations—high growth need strength, high complexity, and low supportive context, and high growth need strength, high supportive context, and high complexity—are also apparent in Figure 1. Lower levels of expected creativity are observed when growth need strength is high and supportive context and complexity are low, and when supportive context is high but both growth need strength and job complexity are low. The lowest expected levels of self-reported creativity are observed either when all three variables are low or when job complexity is high, and both growth need strength and context are low. It appears that high scores on at least two of the three variables is beneficial for creativity, whereas a high score on only one of the three reduces expected creativity, with the combination of high complexity, low growth need strength, and low supportive context yielding as low an expected, self-reported creativity as when all three conditions are low. Even though the similarity of the two lowest, and two highest, expected creativity levels were not predicted, the pattern of results is largely consistent with our predictions (as shown in six of the eight data points of Figure 1), offering support for Hypothesis 3.

Finally, although we do not interpret the main effects and two-way interactions, given the significant three-way coefficient, for completeness we report a significant main effect for growth need strength ($b = .18, p < .01$; Table 2, step 2) and a significant two-way coefficient for the interaction between growth need strength and supportive work context ($b = .16, p < .01$; Table 2, step 3), in support of both Hypothesis 1 and Hypothesis 2.

**DISCUSSION**

Our study makes three unique contributions to the literature. First, we hypothesize and find that growth need strength is an important individual difference variable to consider for employees’ self-reported creative performance, one with impact extending over and above the effect of other individual differences that have previously been found to be associated with creativity. Second, we hypothesized and found that growth need strength interacted with a supportive work context for creative performance. Third, we extend the work of Scott and Bruce (2004) and Tierney and Farmer (2002) by examining a wide cross-section of jobs, finding that job complexity moderates the association between growth need strength and a supportive work context. In the following section, we discuss our contributions in more detail, highlighting the theoretical and practical implications associated with each.

Growth need strength is important for creativity across jobs that vary on their level of substantive complexity. With regard to growth need strength, we have not only isolated its unique role relative to employee creativity, but have also shown that it contributes to creativity over and above creative personality, intrinsic motivation, and cognitive style. Additionally, growth need strength was found to interact with a supportive context for cre-
ative performance. These findings suggest that managers may want to attend to their employees’ job-specific growth needs, which can be easily ascertained using surveys. Furthermore, to facilitate creative performance, matching an employee with high growth need strength to a work context that is supportive of creativity is most beneficial.

In examining the relationship between growth need strength, work context, and job complexity, we were able to tease out which combinations are better suited for employees’ self-reported creativity. The slope of the equation mapping the association of growth need strength with self-reported creativity is most positive when supportive context is high and job complexity is low; the low supportive context and high job complexity situation shows the next most positive slope; and context and complexity both high shows the third most positive association. Overall, it would appear that an individual’s scoring high on growth need strength, working in a context that is supportive, and working in a complex job result in the highest level of self-reported creativity. However, individuals with high growth need strength working in a supportive context can still have high levels of creativity, even when their job complexity is relatively low. Although we expected that this situation would result in relatively high self-reported creativity, we did not predict that the expected values would be so similar to those observed when all conditions were high. Thus, our results indicate that if an individual seeks growth and learning from work and his/her work context supports creativity, the individual can overcome having a job that is more routine and less autonomous and find ways to essentially build creativity into the job. In part, this view suggests that individuals and environments can compensate for jobs. A possible explanation may be that often individuals are not well matched with their jobs because of the availability of work in their area or a number of other factors; however, when an employee seeks to grow and develop at work and the context supports this, she or he will still look at different ways to perform the job and be creative. Also, we found that a context that is supportive of creativity is also important for those with low growth need strength. That is, if employees are not predisposed to want to learn new things and grow, yet work in complex jobs, in order for them to have higher levels of creativity, the work context has to be supportive of creativity. Our findings highlight that a supportive work context plays a critical role for creativity, and this finding has theoretical and managerial implications, particularly given that our unique sample enabled us to examine the role of supportive contexts across a range of jobs, organizations, and industries.

At the other end of the spectrum, as expected, when all three components are low, so are the levels of creativity. The lowest slope for the graphed relationship between growth need strength and self-reported creativity is evident when there is a context with low levels of support and low levels of job complexity. Also, when growth need strength and context are both low, high job complexity does not raise creativity. We did not expect the observed similarity between predicted creativity when complexity is high but supportive context and growth need strength are both low and predicted creativity when all three are low. This finding poses a particular management challenge, since it appears a job can be complex and highly challenging, but if the employee does not have that inner drive to strive and succeed and the context is not supportive, creative performance will be low. Finally, an interesting picture emerges in the middle ground, where we observe the highest slopes, in that the individuals who have low growth need strength but complex jobs and supportive work contexts, and those who have low growth need strength and low complexity, but supportive contexts, find ways to be creative. In these situations, where growth need strength, supportive context, and job complexity are neither all high nor all low, mood may come into play, wherein “dual tuning” from both positive moods and negative moods (George & Zhou, 2007) results from the perplexity whereby less than full alignment of personal factors, contextual support, and job complexity cause a tension that encourages creative performance. Taken together, our results indicate that having an internal driver and a context that supports taking risks and trying new things are more important than having a complex job. This could be in part because every job inherently requires some level of creativity, and individuals with high growth need strength in a supportive context will seek out any creative requirements and run with them. Therefore, although managers may or may not be able to structure jobs, they can work on work context and hiring so that matching person and context can compensate for job. They also can compensate to some extent for low growth need strength among employees in complex jobs by increasing encouragement, recognition, respect, and rewards for those who exhibit creative performance.

Organizational support has a long research history (see Rhodes and Eisenberger [2002] for a meta-analysis) showing it to be important for performance of in-role and extra-role activities. We extend this line of inquiry by looking specifically at support for creativity and find a strong, positive
association with creative performance, which may be in-role for more complex jobs but may well be extra-role for less complex jobs. From a practical standpoint this finding is important, since a context supportive of creativity is the area where managers have the most control and can reap the broadest rewards. If managers can be given guidelines regarding how to design and shape work contexts to be more supportive of creative efforts, we would expect to see gains in creative performance regardless of the type of work or the employee in question. Therefore, our research clearly indicates that context matters and that a context supportive of creativity should be developed and managed for employees in all jobs.

In view of our results, future research should examine more closely potential differences in what is important for employees’ creative performance that may depend on the complexity of their jobs. For example, some studies have shown a positive effect of supportive evaluation on creative performance (e.g., Shalley & Perry-Smith, 2001; Zhou, 2003), but the strength of this effect has not been examined in relation to different types of jobs or tasks that vary on complexity. Also, it would be helpful if future research clearly stated the range of complexity in the jobs studied, so that researchers will be better informed about the generality of creativity findings for a variety of job types. Finally, more research should be aimed toward examining the effects of individual differences and a supportive context across a broad range of jobs, moving away from the more prevalent focus in the literature on R&D or scientific jobs, since some level of creativity can occur in any job (Shalley et al., 2000). The findings of such more broadly framed future creativity research can potentially speak to the full spectrum of jobs in the modern economy.

**Strengths and Limitations**

A clear strength of our study is our data. We were able to directly access a large sample of full-time employed working individuals from many industries and occupations, mirroring the demographics of the U.S. Census. We had a very good response rate for this type of survey. In addition, in designing our survey, we were aware of potential limitations associated with this methodology and were able to proactively take steps to minimize their potential seriousness by taking care in the ordering of our survey items, matching our data to the *Dictionary of Occupational Titles* job classification system, and testing for common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) and multicollinearity.

There are some limitations to our study. First, most of our data are self-reported, including our creative performance measure. However, it has been proposed that managers and supervisors may be more likely to observe behaviors designed to impress and thus, are more able to accurately rate objective performance than creativity (Janssen, 2000, 2004; Organ & Konovsky, 1989). For instance, creativity can be more than just novel and useful products, in that some employees may use very creative processes to conduct their work regardless of the level of creativity attained in the final product. That said, there are ways to encourage managers to be more aware of creative processes and outcomes, such as setting creativity goals or incorporating creativity into employee evaluations. Janssen (2000) found self-reports of innovative behaviors significantly correlated with leaders’ ratings, and leaders’ ratings have been found to significantly correlate with archival measures (Scott & Bruce, 1994). The similarity of our correlations to those presented in other studies using supervisor ratings of creativity provides additional confidence in our data; future research should incorporate third-party evaluations of creativity. Since prior research that has used external creativity ratings has primarily used those provided by managers, in future research it would be interesting to see if others, maybe raters in various roles, agree with regard to creative performance evaluations. Thus, it may be valuable to have some sort of 360-degree creativity evaluation using peer assessments. This practice would more completely represent creativity and get around the difficulty of supervisors’ awareness of employees’ idea generation. Such broader creativity evaluation could thus be particularly important for innovation—the implementation of creative ideas—since others need to be aware creativity is happening.

The second limitation related to our data is that they were all collected from a single source at a single point in time. That said, we made every attempt to minimize concerns of sampling bias and common method variance. Also, it is important to emphasize that the measures used in this research were collected as part of a large survey that lasted approximately 30 minutes and was conducted over the phone. In designing the survey, we were careful to adhere to the recommendations of Podsakoff and colleagues (2003), in that we separated questions used in the study from each other to minimize this problem. Given this, and given that in a phone survey, participants cannot flip back through questions to look at what has previously been answered, we are less concerned about this limitation. In addition, interactions, in particular complex ones
such as those in our analyses, tend to lower concerns for same-source bias. Furthermore, Spector (2006) argued that worries about common method variance actually may be distorted and overstated. Method bias may have inflated the magnitude of the linear effects, but our primary hypotheses focus on the interaction effects. Evans conducted an extensive Monte Carlo study regarding whether method variance might generate artifactual interactions and concluded this: “The results are clear-cut. Artifactual interactions cannot be created; true interactions can be attenuated” (1985: 305). This finding, combined with how we collected the data, our comparison of the data to the U.S. Census, and the use of the Dictionary of Occupational Titles description of occupations rather than self-reported MPS complexity for occupational categories, suggests that our primary findings are not overly susceptible to method effects.

Finally, we have a large sample size and need to be sensitive to the differences between statistical and substantive significance. Our increment in explained variance ($R^2$) is .04, which is an 18 percent increase in going from the main effects to the two-way interaction model, and another .04 or 36 percent increase in explained variance (adjusted $R^2$ is .02, or a 27 percent increase) from the main effects model when the three-way interaction is entered into the equation. This amount of explained variance exceeds that in similar models (i.e., George & Zhou, 2007). Given the size of our effects and their comparison to studies with smaller numbers of respondents, we conclude that the tests of our hypotheses reflect substantive, and not merely statistical, significance.

Conclusions

Finally, since job complexity did moderate the relationship between growth need strength and a supportive context for creativity, this study highlights the importance of understanding the nature of the job being considered, so that the individual differences most likely to foster creativity are matched with the work being performed, and its work context.

REFERENCES


Christina E. Shalley (christina.shalley@mgt.gatech.edu) is the ADVANCE Professor in the College of Management at the Georgia Institute of Technology. She received her Ph.D. from the University of Illinois at Urbana-Champaign. Her current research interests focus on investigating the effects of various social and contextual factors in enhancing or stifling employee creativity and examining ways to structure jobs and the work environment to support creative work.

Lucy L. Gilson (lgilson@business.uconn.edu) is an associate professor and Ackerman Scholar at the University of Connecticut. She earned her Ph.D. in organizational behavior from Georgia Institute of Technology. Her research focuses primarily on teams and creativity; here she has examined teams in different organizational settings and performing a diverse range of jobs. Specifically, she studies how creativity, employee empowerment, diversity, fairness issues, and virtual communication influence team effectiveness.

Terry C. Blum (terry.blum@mgt.gatech.edu) is director of the Institute for Leadership and Entrepreneurship and holds the Tedd Munchak Chair in the College of Management at Georgia Institute of Technology. She received her Ph.D. from Columbia University. Her current research interests include social business, leadership for alternative futures, diversity, values, and the relationship of organizations and management of behavioral health organizations to treatment innovation and outcomes.