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Factors Influencing Individual Creativity in the Workplace: An Examination of Quantitative Empirical Research

Toby Marshall Egan

The problem and the solution. Research on individual creativity within human resource development (HRD) has emerged as a body of research fairly recently. This article explores individual employee creativity by detailing identified roles of individual factors and external influences featured in HRD-related research utilizing a quantitative empirical methodology. Research examining the effect of general personality characteristics, self-perception, goal setting, feedback, leadership, role modeling, and other factors associated with individual creativity are detailed. Recommended future directions regarding research on employee creativity with particular focus on HRD-related issues are described.

Keywords: *creativity; employee; individual*

Creativity can solve almost any problem. The creative act, the defeat of habit by originality, overcomes everything.

—George Lois

The presence and performance of creative people is essential to every organization whether in the public or private sector. The ability to invent, dream, problem solve, craft, and correspond in fresh, new ways is vital to organizational success. In our dynamic working environments, organizations seek creative thinkers whether administrators, artists, business entrepreneurs, community leaders, designers, educators, engineers, executive directors, inventors, medical researchers, scientists, technology innovators, or urban planners. Although there may be relative agreement that those with the ability to generate novel ideas play a special role in organizations, there is much to learn in terms of just how a person generates ideas and outputs that are

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viewed as creative and the contextual factors that may assist in the generation of these novel ideas and outcomes.

Understanding factors associated with creative individuals, groups, organizations, and even larger human systems is important to human resource development (HRD). Innovation, the product of creative ideas and actions, has been the subject of countless books, university courses, professional associations, and even governmental and educational reform efforts. It could be argued that HRD is in and of itself a creative activity tapping available data and perspectives for decision making, action, and performance. The fostering of creativity is a necessity, not an option, for most organizations interested in responding to: (a) advancing technology; (b) a changing environment; (c) changing organizational structures or strategies; (d) overcoming competitors that improve their products, processes, and services; (e) evolving customer desires; and (f) evolving societies influenced increasingly by global issues and diversity.

Success in responding creatively and effectively to organizational demands will enhance the role of HRD practitioners in organizations and will provide additional support for the field overall. As suggested by Swanson and Holton (1997), the reciprocal interaction among research, theory, and practice is essential to HRD and related fields. The aim of integrating research, theory, and practice benefits all three areas and the HRD field as a whole.

Equally important to organizational success is individual creativity. A general collective interest on the part of researchers regarding what differentiates individuals in terms of their orientations to and outcomes for creativity is a recent phenomenon. Focused and in-depth empirical research on workplace creativity has emerged only over the last 15 years but has increased steadily (Zhou & Shalley, 2003). Interactions between a variety of organizational contexts and factors have been explored. Although available research has contributed both to HRD-related knowledge associated with creativity and to the development of frameworks for better understanding creativity research, exciting possibilities for future exploration remain.

The focus of this article is to explore available quantitative empirical research associated with creativity in the workplace with a particular focus on the individual factors and external influences that affect individual creativity, to assess the current state of quantitative empirical creativity research, and to propose future research exploring creativity in HRD. For the purpose of this exploration, the term *quantitative empirical research* will refer to systematic theory-based studies utilizing positivistic methodology and statistical methods of data analysis.

Defining Creativity

Workplace creativity is generally framed in the context of organizational products, services, processes, and procedures and focuses on the production of new and useful ideas (Amabile, 1996; Oldham & Cummings, 1996; Zhou, 1998). Operational definitions of creativity focus on the production of outcomes or responses reliably evaluated as creative by informed individuals who serve as judges (Amabile, 1996). Informed judges are typically those with backgrounds and expertise in the area to be examined.

Judges must come to an acceptable level of agreement regarding the extent to which a product or concept is creative (Amabile, 1996). This approach to assessing creativity is called the consensual assessment technique (Amabile, 1996). Creativity is rarely described in discrete terms; rather, it is viewed as a continuous notion focusing on how relatively creative a given concept or product may be (Perry-Smith & Shalley, 2003). Similar to discussions framing change as a paradigm shifting or radical versus a relatively minor adjustment (Schein, 1999), as discussed by Taylor and Callahan (2005), the continuum for describing creativity can range from a creative adaptation to a dynamic alteration.

Quantitative Empirical Approaches to Creativity Research

General quantitative empirical research approaches to exploring creativity include field surveys, laboratory studies, and longitudinal approaches. Like many HRD studies, the majority of creativity studies reviewed utilized survey methods in the context of actual work environments. Among the advantages of conducting quantitative empirical field studies are the possibilities for increased external validity of the study (Borg & Gall, 1989). Conversely, laboratory approaches are unusual for topics associated with HRD and offer unique opportunities for exploration. The strengths of laboratory studies include a control of the environmental factors, a relatively clear identification of constructs, an ability to manipulate variables, and an increased likelihood of connections to causality. Although rarely conducted, longitudinal studies on creativity provide greater promise regarding the development of theoretical and causal interactions among variables enabling or hampering creativity.

The most commonly used approach to studying creativity involves supervisor ratings of employees. In addition, a large number of studies exploring creativity utilize Amabile's (1996) consensual assessment technique (Zhou & Shalley, 2003). The technique involves two or more judges with relevant backgrounds, experience, expertise, and education as raters. Judges are typically provided a definition of creativity (commonly involving originality, novelty, and usefulness) and are asked to provide independent ratings

TABLE 1: Key Resources for Quantitative Empirical Research on Individual Creativity in Human Resource Development Contexts

<i>Academy of Management Journal</i>	<i>Journal of General Psychology</i>
<i>Academy of Management Review</i>	<i>Journal of Management Studies</i>
<i>Administrative Science Quarterly</i>	<i>Journal of Personality and Social Psychology</i>
<i>Advances in Experimental Social Psychology</i>	<i>Journal of Vocational Behavior</i>
<i>Advances in Developing Human Resources</i>	<i>Organizational Behavior and Human Decision Processes</i>
<i>American Educational Research Journal</i>	<i>Organizational Behavior and Human Performance</i>
<i>American Psychologist</i>	<i>Personality and Social Psychology Review</i>
<i>Creativity Research Journal</i>	<i>Personnel Psychology</i>
<i>Educational Leadership</i>	<i>Psychological Assessment</i>
<i>Human Resource Development International</i>	<i>Psychological Bulletin</i>
<i>Human Resource Development Quarterly</i>	<i>Psychological Reports</i>
<i>Human Resource Development Review</i>	<i>Psychological Review</i>
<i>Journal of Applied Psychology</i>	<i>Research in Organizational Behavior</i>
<i>Journal of Counseling Psychology</i>	<i>The Journal of Psychology</i>
<i>Journal of Creative Behavior</i>	

regarding the creativity of each outcome or concept under examination (Shalley, 1991, 1995; Shalley & Perry-Smith, 2001; Zhou, 1998; Zhou & Oldham, 2001; Zhou & Shalley, 2003). Other studies use measures such as the number of patents, research papers, or technical reports developed or ideas submitted in employee suggestion boxes (Zhou & Shalley, 2003). The following section outlines key research variables explored in creativity research.

Key Research Variables

Four informants, who all had academic backgrounds in HRD or related fields and who had published research focused on individual creativity, assisted in the identification of key refereed journals related to the research question (see Table 1). The research question for this literature review and synthesis was: What does the available HRD-related literature tell us about individual creativity in workplace contexts?

A total of 121 refereed articles were identified in full searches of the journals listed in Table 1. Also identified were several books and periodicals related to the research question under exploration. To organize the key elements and variables selected from the literature, two major headings were identified, and eight subareas were developed (see Figure 1).

The major headings are individual creativity factors and external influences. The three subareas associated with individual creativity factors relate to general personality, Big Five personality, and self-perception. The five

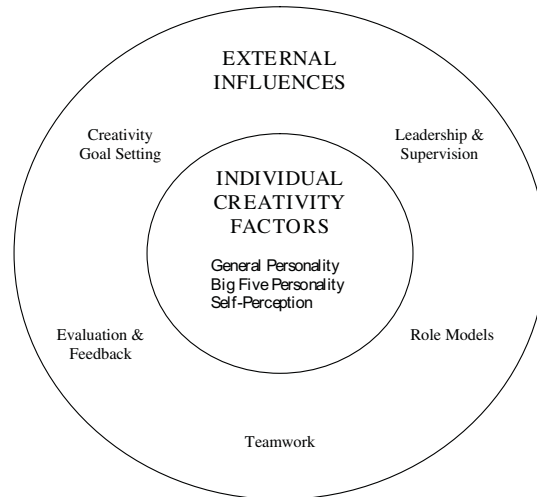


FIGURE 1: Key Factors Explored in Individual Creativity Research

subareas under external influences include creativity goal setting, evaluation and feedback, teamwork, role models, and leadership and supervision. The following sections outline results from quantitative empirical research resulting from searches in the aforementioned 121 refereed journal articles in the categories identified in Figure 1.

General Personality

A portion of available studies examine the characteristics of creative individuals from the perspective of general personality research and theory: “Creative individuals appear characterized in part by the ability to perceive and describe what remains hidden from the view of others” (Carson, Peterson, & Higgins, 2003, p. 499). Several creativity scholars have suggested that those involved in the development of the most creative work-related outcomes are both qualitatively and quantitatively distinctive from their peers (Simonton, 1999). Some of the earliest research on creativity (Baron, 1965; Mackinnon, 1965) focused on individual problem-solving approaches and aspects of individual personality leading to creative outcomes. Those studying creativity from the perspective of personality argue that individual characteristics are a significant predictor in the development of creative ideas or outputs.

A significant body of literature that explores the characteristics and personality factors associated with individual creativity from intelligence and

historical backgrounds to cognitive and behavioral factors has been assembled (Martindale, 1989). The review of literature for this article found the Creative Personality Scale (CPS) to be referred to most often in HRD-related research articles. Overall, these studies have increasingly identified a consistent number of factors associated with individual creativity including aesthetic sensitivity, attraction to complexity, broad interests, intuition, aesthetic sensitivity, and toleration of ambiguity (Martindale, 1989).

The CPS is one of the most highly regarded creativity-related instruments (Gough, 1979; McCrae, 1989; Zhou, 2003). In his approach used in the construction and validation of the CPS, Gough (1979) used adjectives associated with creative or noncreative personalities. The CPS includes 30 items developed systematically from the 300-item Adjective Check List (Gough, 1979). Respondents are asked to select from adjectives that best describe them. Eighteen of the 30 adjectives describe characteristics most consistent with creative personalities: capable, clever, confident, egotistical, humorous, informal, individualistic, insightful, intelligent, interests wide, inventive, original, reflective, resourceful, self-confident, sexy, snobbish, and unconventional.

Twelve additional CPS adjectives are common features of less creative individuals: cautious, commonplace, conservative, conventional, dissatisfied, honest, interests narrow, mannerly, sincere, submissive, suspicious, and phony. Overall, CPS survey items have been validated and are consistent with the key features associated with creativity identified above. Despite the efforts of a number of researchers, reliable measures as predictors of creativity in a variety of contexts, including organizational environments, have yet to be conclusively developed (Zhou & Shalley, 2003).

In an effort to further explore the concept of creative personalities, Oldham and Cummings (1996) used the CPS instrument to explore the moderated and direct effects of creative personality on creative outcomes. It was hypothesized in the study that factors such as supervision and personality factors associated with creativity could interact, leading to increased levels of creative outputs. The study found that supportive supervisory behaviors in combination with creative personality traits led to more creative outcomes. Zhou and Oldham (2001) also used the CPS and found that individuals with more creative personalities had more creative outcomes.

In a study exploring potential ways to increase the creativity of individuals with orientations toward creativity, Madjar, Oldham, and Pratt (2002) found that creative efforts of individuals with less creative personalities were enhanced by support from friends and family. Zhou's (2003) study found that employees with less creative personalities were more creative in the presence of monitoring and interaction with creative coworkers. Zhou concluded, both from her study results and from a thorough review of related literature, that inexperienced individuals with lower confidence or

self-esteem were less likely to exhibit creative behaviors. Interaction and monitoring appears to enhance the creativity of both those who feel uncertain about their creativity and those who score low on creativity-related measures. Additional discussion regarding the role of external influences on a creative outcome is presented below.

Big Five Personality

The Five-Factor Model of personality (also known as the Big Five Model) is a thorough and well-researched model with a long history of development. The model was validated primarily by organizational psychologists (Wiggins & Trapnell, 1997) and has been explored in other HRD-related literature as well. The Big Five model situates personality traits hierarchically with an emphasis on conscientiousness, openness to experience, extraversion, neuroticism, and agreeableness.

Many in HRD-related fields, especially industrial-organizational psychology scholars, argue that the Big Five features individual differences that are most prominent and most important to workplace performance. The Big Five model is intended to provide an elaboration of core personality traits. The Big Five include individual orientations associated with openness, conscientiousness, extraversion, agreeableness, and neuroticism. The Big Five have been translated into a number of languages, and validation efforts in several cultural contexts including Chinese, Filipino, German, Hebrew-speaking Israeli, Japanese, and Spanish have been undertaken with largely acceptable results.

According to Costa and McCrae (1995), the factors most associated with creativity are conscientiousness and openness to experience. This perspective was confirmed by Feist's (1998) meta-analysis of studies focusing on artists and scientists, who were found to be less conscientious and more open to experience than were those in less creative occupations. Although Feist's study supports two elements of the Five-Factor Model in association with creativity, there was no claim made that individuals in other professions were less creative or that the same factors would be related to their creativity. The relationship among creativity, openness to experience, and divergent thinking was supported in several other studies as well (Carson et al., 2003; Peterson & Carson, 2000).

In an effort to expand understanding regarding the relationship between conscientiousness and openness to experience, George and Zhou (2001) explored creativity with employees. The results of this study indicated that higher conscientiousness was related to lower levels of creativity and that those individuals with higher levels of openness to experience exhibited

characteristics associated with creativity (e.g., curiosity, flexibility, imaginativeness, openness to change, and unconventional ideas). Employees with lower openness have been found to be more rigid and conventional in other studies as well (Feist, 1998). George and Zhou (2001) have suggested that positive feedback and tasks allowing for a variety of approaches and outcomes may be a creative catalyst for employees with high levels of openness. It was also emphasized that organizations should be aware of situations and environmental factors that may inhibit openness to experience even among those with orientations toward being creative and open.

In a recent study, Carson, Peterson, and Higgins (2003) added the term latent inhibition (LI) to the creativity and personality discussion. LI is defined as an individual's capacity to sort and determine the relevance or irrelevance of a variety of sensory stimuli. The LI construct appears similar to the Big Five concept labeled openness to experience. In every context, individuals make conscious and unconscious choices regarding aspects of their environment on which to focus or to screen out. Carson et al. hypothesized that individuals with lower orientations toward screening out sensory information previously thought may contribute to novel ideas. The findings from the LI study found strong relationships between lower LI and higher creativity and higher LI and lower creativity. The findings support the observation by Dellas and Gaier (1970) that creative individuals are less likely to eliminate complete details perceived by others to be irrelevant.

Self-Perception

The impact of employees' self-perception regarding their individual creativity on their own work-related outcomes is an emerging area of study. Farmer, Tierney, and Kung-McIntyre (2003) explored the concept of creative role identity (which was defined as whether individuals view themselves as creative) among doctors, engineers, pharmacists, research scientists, and software developers. The results found that creative role identity was predicted by three factors: creative expectations from coworkers, self-views of creative behavior, and exposure to U.S. culture. Creativity was highest when employees with a high creative role identity worked for organizations perceived to value creativity.

Another emerging area of research focuses on the concept of creative self-efficacy, which is defined as employees' beliefs that they can be creative in their work roles. Tierney and Farmer (2002) found creative self-efficacy to be associated with job complexity, job self-efficacy, job tenure, and supervisor behavior. Creative self-efficacy was found to also relate to creative performance.

Creativity Goal Setting

The power of suggestion appears to be evident when it comes to creativity. Suggestion, in contexts where creativity is identified as important or as a specific goal, has been found in several studies to influence creative outcomes. Manske and Davis (1968) found that test takers who were asked to be creative in deriving solutions were considerably more creative on a divergent thinking test than were those who were not given such instructions. Similarly, Speller and Schumacher (1975) found that results on creativity tests improved when individuals were told they were taking a creativity test. These results indicate that suggesting creativity as relevant or important influences responses.

Goal setting is an approach that could be taken by managers or HRD-related practitioners to influence creativity in the workplace. The majority of goal-setting research has been focused on specific performance outcomes such as improved manufacturing output. According to Locke and Latham (1990) and Kanfer and Ackerman (1989), goals increase employee motivation, attention, and effort and can be a very effective managerial technique. In addition, goal setting has been found to be associated with performance particularly when goals are difficult to achieve (Locke, Shaw, Saari, & Latham, 1981). Goal achievement has been found to be associated with goal commitment. A concurrent benefit to goal setting can be the development of new strategies that increase the likelihood of goal achievement.

Whether goal setting inhibits or serves as a catalyst for creativity may depend on the focus of the organization or person setting the goals. If goals aim employees toward immediate performance outcomes, they may be distracted from creativity. If goals aim employees toward critical areas for improvement or toward more global considerations of tasks or processes, creativity may be stimulated. Shalley (1991) explored the effects of creativity versus productivity goals as they related to the creative performance of individuals engaged in a simulation. Research participants were given either a productivity goal or a creativity goal or both. These goals were set at one of three levels—difficult, do your best, or no goal. The findings found an interactive effect for goal type on creativity. Those participants with either a do your best goal or a difficult productivity goal in addition to a creativity goal exhibited high levels of productivity and creativity. Those individuals, given only a do your best or difficult productivity goal without being assigned a creativity goal, were found to be much less creative.

Shalley (1991) concluded that creativity goals served as a valuable addition to productivity goals that could lead to better outcomes than could the setting of productivity goals alone. These findings were supported by Carson and Carson's (1993) study of student creativity goals and by Shalley's (1995) study of individual creativity goals. Both studies reinforced the notion that the presence of a creativity goal increases creative outputs.

Whether the presence of creativity goals may inhibit production when the production goal is exclusively output will require additional exploration.

Evaluation and Feedback

Research regarding employee creativity has generally explored employee reactions and outputs when employees anticipate being evaluated. Some studies have indicated that when employees expect evaluation they may be less creative (Amabile, Goldfarb, & Brackfield, 1990; Shalley & Oldham, 1985). The results from these studies indicated in part that intrinsic motivation by employees may be reduced by an anticipated evaluation or by the feeling of owning the task and that being able to enjoy the work as a creative effort was clouded by the forthcoming external assessment. Conversely, other studies have connected evaluation to increased levels of motivation and creativity (Harackiewicz & Elliot, 1993; Jussim, Soffin, Brown, Ley, & Kohlhepp, 1992).

Shalley's (1995) study found high levels of creativity by individuals working alone with a specific creativity goal and an expectation that they would be evaluated externally. An explanation for the different effects provided by Shalley was that because participants in her study were business students, they may have framed evaluation as useful to their future success. Respondents in other studies may have had evaluation experiences in the environment under study that led them to conclude that future evaluation would not be useful or could be unsupportive of creative outputs.

Shalley (1995) provided an additional suggestion that the conflicting findings could be explained by cognitive evaluation theory (Deci & Ryan, 1985). Viewed from this theoretical perspective, individuals anticipating that feedback would not inhibit their autonomy or intrinsic motivation will find feedback to be potentially valuable and supportive of their creativity. Alternatively, individuals perceiving feedback to be restrictive regarding their intrinsic motivation and creativity will have a negative perception regarding feedback and therefore will be less likely to develop creative outputs.

In addition to evaluation of creativity, the characteristics of the feedback provided, the method of how feedback is forwarded to individuals, and the way in which individuals perceive the feedback they receive are important elements. One characteristic of creativity-related feedback is whether, when contrasting creative output to a normative or situational standard, a particular output is determined to be comparatively positive or negative. This positive or negative outcome is called feedback valence and was explored by Zhou (1998). When comparisons indicate individual ideas or outputs to be less creative than established criteria, feedback will be negative. Positive feedback would be provided for products or concepts that were

more creative than the criteria. Zhou (1998) also emphasized the importance of the style utilized by persons providing feedback related to creativity.

According to Zhou (1998), feedback style can be an important determinant regarding whether individuals are able to receive feedback in the manner intended and whether they are able to utilize the feedback in a manner most likely to improve future efforts. Zhou identified feedback styles to be either informational or controlling. Controlling feedback commonly communicates a specific expectation for future outputs that may diminish recipients' sense of control over future outcomes and may reduce feedback recipients' sense of intrinsic motivation which, as argued earlier, is important for increasing the likelihood for creative outcomes. An informational feedback style presents perspectives in a manner that is nonthreatening and nonrestraining for the feedback recipient. According to Zhou, this type of feedback maximizes the likelihood that individuals will maintain their sense of intrinsic motivation and will be open to attempting future tasks with an orientation toward creative ideas or outputs.

On the other hand, Zhou (1998) tested the aforementioned perspectives on controlling versus informational feedback utilizing a memo task approach similar to that used by Shalley (1991). The focus of the research was to determine the impact of various feedback styles on creative outputs in a laboratory setting. Four different feedback valence style conditions were developed (positive informational, negative informational, positive controlling, negative controlling), and participants were randomly assigned to each condition. Results from the study supported the hypotheses. The highest levels of creativity were found with individuals receiving positive feedback utilizing an informational style. The lowest levels of creativity were associated with negative feedback administered with a controlling style.

Feedback with an orientation toward development is another aspect that may support creativity. Feedback with a developmental intention provides recipients with content aimed toward enabling employees to improve performance and learn on the job. This type of feedback is based on the underlying assumption that individuals can build upon existing abilities and skills. Feedback without developmental content provides little usable information for employees and therefore will be less likely to support employee creativity.

Developmental feedback was considered in context by Zhou and George (2001), who found dissatisfied employees, committed to their organizations only because other job alternatives were not present, actually increased their creative performance when provided developmental feedback. This increase in creative performance occurred despite employees' having identified dissatisfaction and despite a negative outlook regarding their work sit-

uations. The outcomes were explained by Zhou and George as resulting from employees' making the best of an undesirable situation whereby they faced the options of being passive about negative job-related experiences, working to meet only minimum performance standards, or being proactive in creatively altering their current situation to something more desirable. Employees receiving feedback regarding job improvement directed their energies toward seeing their work from a more constructive perspective, developing new and creative approaches to engaging in workplace activities.

In another study, Zhou (2003) found that developmental feedback provided to health care workers actually increased the likelihood that employees would demonstrate creative performance. Zhou concluded that intrinsic motivation was increased by the developmental feedback provided to these employees. Other employees in turn benefit from the presence of those exhibiting creativity. These conditions increase employee focus on skill mastery (Dweck & Leggett, 1988; Utman, 1997). Interactions between creative coworkers may extend their willingness to learn, increase persistence in problem solving, and increase risk taking with the aim of improving performance (Dweck, 1986).

Teamwork

Well-designed research regarding the impact of teamwork on individual creativity has been minimal to date, and the available studies have yielded inconsistent results. Two previously identified laboratory studies, conducted by Shalley (1995), compared independent work away from the influence of others to the influence of coaction (working collectively within a small group on the same task) on individual creative performance. Shalley's mixed findings appear to support R. S. Baron's (1986) perspective that the presence of team members or coactors could lead to internal individual conflict with regard to attention and use of creative energy. Shalley's two-stage study found, on one hand, that individuals were able to generate more creative outputs when isolated, but in the second level of the study it was determined that in some circumstances interaction with teammates or coactors may positively influence the level of individual creativity. Therefore, under certain conditions, individual creativity may or may not be enhanced by teamwork.

Amabile, Goldfarb, and Brackfield (1990) explored the impact of surveillance (watching or monitoring the work of a team member or follower) by team members or team leaders and of coaction in support of team-related efforts. They found nonsignificant negative effects for surveillance and no significant effects for coaction. An earlier study by Matlin and Zajonc (1968) found that surveillance had a significant negative effect on a key

aspect of individual creativity—originality. Much more work will need to be done to determine the predictors of team members or coactors on the creative outcomes of individuals. In response to the lack of research on creativity and teamwork, Kurtzberg and Amabile (2001) developed a rationale and research agenda that encouraged further exploration. By following the agenda provided by Kurtzberg and Amabile and by maintaining the essential connection between research and practice, “HRD scholars and professionals can develop insights beneficial to creative idea generation, creative team outputs, and organizational productivity” (Egan, 2005, pp. 222-223).

Role Models

Role models are important for individual job performance and career success (Bloom & Sosniak, 1981; Zuckerman, 1977) and may also contribute to the development of individual creativity. Modeling by more experienced peers or role models has been found to be important to the development of creativity or orientations to creative thinking by a wide variety of individuals from Nobel laureates (Zuckerman, 1977) to gifted elementary school students (Bloom & Sosniak, 1981). These insights regarding the general notion of modeling and the development of creativity through role modeling contributed to the development of behavior modeling in organizational training sessions (Decker & Nathan, 1985). Cognitive modeling is often used in training sessions to introduce techniques for work-related problem solving. Cognitive modeling techniques have been found to increase creative responses and originality (Harris & Evans, 1974; Meichenbaum, 1975). In a study of a cognitive modeling training session focusing on innovative problem solving, Gist (1989) found an increase in originality and numbers of ideas generated by managers participating in the session.

In their exploration of the effects of role modeling on the development of creativity, Zhou and Shalley (2003) cite theoretical support based on Bandura’s (1969) social learning theory. According to Bandura, modeling and self-control processes support vicarious learning.

If individuals are capable of performing a behavior, but do not, they are more likely to exhibit it after a visual demonstration of the behavior (i.e. behavior modeling) or through the transmission of examples of appropriate rules and thought processes (i.e. cognitive modeling). (Zhou & Shalley, 2003, p. 191)

In workplace situations, individuals not only observe the behaviors modeled by others but actually retain an interpretation of how to behave in that situation in their memories for later use in similar situations (Bandura, 1969; Shalley & Perry-Smith, 2001).

Leadership and Supervision

Available research suggests that leadership and supervisory behaviors may also influence workplace creativity. In their study of leadership practices in 46 Korean organizations, Shin and Zhou (2003) explored the role of conservation value (orientation toward security, tradition, and conformity) and transformational leadership (inspirational motivation, charisma, intellectual stimulation, and individual consideration; Bass, 1985) in interactions between 290 employees and their supervisors. The researchers hypothesized that transformational leadership would more positively affect the creativity of individuals with high orientations toward conservation, whereas those with lower orientations toward conservation would exhibit less creativity. It was also hypothesized that intrinsic motivation would mediate the relationship among transformational leadership, conservation, and creativity. Results supported the research hypotheses identifying transformational leadership as supportive of employee creativity. In addition, conservation was found to moderate the relationship between transformational leadership and creativity. Finally, intrinsic motivation mediated the relationship between transformational leadership and creativity.

George and Zhou (2001) explored the role of supervisor monitoring and conscientious behavior by employees on creativity. Individuals identified as displaying conscientious behaviors, as defined by Costa and McCrae (1995), exhibit self-control and a clear sense of purpose, conform to norms, obey rules, and are dedicated and achievement oriented. Although these characteristics have been found to be positively associated with work-related performance, George and Zhou (2001) explored the notion that because these personality characteristics may reflect an unhealthy attitude toward work or an excessiveness regarding workplace obligations, they may undermine the creative performance of those exhibiting conscientious behaviors. The researchers argued that following rules and working toward existing goals ran counter to an orientation toward the generation of new ideas or concepts. George and Zhou cited the interactional perspective on creativity (Feist, 1998; Walker, Koestner, & Hum, 1995) in support of the notion that high conscientious behavior may relate to low levels of creativity.

Although George and Zhou (2001) were unable to find a direct negative relationship between those people who self-report conscientious behavior and their generation of creative ideas or outcomes, an interactive effect was found. It was identified that individuals exhibiting conscientious behavior were found to be low in creativity when high supervisor monitoring and low peer support were present.

Scott and Bruce (1994) tested the notion forwarded by leader-member exchange theory that productive leader-follower exchange led to increased

creative outputs. The researchers hypothesized that leader-follower relationship strength would logically vary in work settings with the stronger leadership connections leading to more creative outputs. Further Scott and Bruce hypothesized a positive relationship between followers' perception of their connection with the supervisor or unit leader and the overall supportiveness of the environment. The results from the study of 172 engineers, scientists, and technicians from a research and development division of a large corporation supported both hypotheses. In other studies exploring the influence of leadership on creativity, Oldham and Cummings (1996) found support for the notion that controlling behaviors had a negative impact on employee creativity, but they did not find a direct relationship between supportive supervision and creative outcomes. However, a study by Redmond, Mumford, and Teach (1993) supported the notion that supportive leader behaviors are associated with more creative outcomes.

Discussion and Future Research Needs

Despite the relative youth of creativity research, significant strides have been made toward better understanding creativity as it pertains to the individual in the workplace. Researchers should find considerable challenges and opportunities with regard to extending the established research agenda and developing new research conceptualizations. Although the field of HRD has been discussed consistently as a field involved in systems-level considerations, it is important that creativity at the individual level also be understood. Individuals are the core subunit of organizations, and we are beginning to have a clearer picture regarding factors influencing individual-level creativity. One of the next steps in creativity research should involve an exploration of the interactions between team and organizational members in the development of creative approaches on the way to organizational innovation.

In terms of individual personality, available research indicated that instruments such as the CPS, a self-report measure, have been validated and, in some cases, cross-validated utilizing self-reported and externally reported observations. These results indicate that individuals with orientations toward creativity can be differentiated from those who are low (or at least lower) in the generation of creative ideas or outputs. In addition, individuals identified as having openness to experience as defined by the Big Five inventory are likely to have a stronger orientation toward creativity than those who are less open to experience. Those individuals with lower orientations toward sorting or screening seemingly extraneous information are up to seven times more likely to exhibit creative behaviors than are those who screen more heavily. It is important to remember that, at least from the perspectives of those researching personality and creativity, individual cre-

ativity is viewed as a relatively stable measure and may not be dramatically influenced by external factors.

For the purposes of informing the HRD field, more studies aimed at determining whether the interaction between personal and contextual factors affects creative outputs is needed. An important area may be the influence of organizational or situational factors on individuals' beliefs about themselves regarding creativity as positive self-perception and self-efficacy appear to have a positive impact on creative outcomes. In addition, early studies pertaining to goal setting suggest that inclusion of creativity as an individual and organizational performance goal may lead to more creative outcomes.

Research pertaining to the influence of external factors on individual creativity supports some key aspects of HRD and organization development literature supporting democratic, cooperative, ethical, and constructive workplace interactions. Perceived support for individual creativity from leaders or supervisors or from the organization in general appears to increase the likelihood of creative outputs. In addition, attempts by managers or peers to provide authentic, positive, and noncontrolling feedback behaviors with developmental intentions are likely to have positive effects on individual or subordinate behaviors.

Despite research findings indicating that creative role modeling has a positive effect on those who observe creative behaviors, there are mixed results regarding the impact of coactors or team members on creativity. Additional work needs to be done in this area to clearly describe individual orientations toward creativity, the nature of teaming relationships, the context in which teamwork occurs, and the factors influencing group and individual outputs. More specific studies elaborating upon and exploring the physical work environment and its impact on team and individual performance is also needed. Much more work associated with the role of financial and other types of incentives or rewards on creative performance would be beneficial.

Implications for HRD and Related Practices

Although the research reported within did not cover organizational policy or efforts by professionals related to HRD or human resource management (HRM), several key findings have implications for HRD and HRM practice.

Recruitment and Selection

Despite the identification of personality factors as predictors of individual creativity, it may not be advisable for HRD or HRM professionals to use

individual screening for creativity even in jobs that would benefit from a more creative individual. Two of the central reasons for not using inventories such as the CPS for selection purposes are that applicants may self-report in a manner that is intentionally skewed and that the interaction of personality and the environment is not clearly understood. Therefore, it is better to strive toward ongoing development of proactive managerial behaviors and a workplace environment that supports creativity. It may also be wise to advertise positions in a manner that emphasizes the level of importance the hiring organization places on creative ideas and outcomes.

Rewards and Feedback Systems

It would logically follow that organizations creating positions that require or expect creative outcomes from employees would build incentive structures in alignment with creative performance expectations (Zhou & Shalley, 2003). Abbey and Dickson (1983) found that the research and development units included both financial and nonfinancial performance incentives associated with creativity. The available research supports the notion that developmentally oriented feedback focusing away from control or negativity will lead to more favorable results as it pertains to employee creativity. Although the association between creativity and feedback appears to be strong, there are few studies that provide insight regarding the rewarding of creative efforts. As has been discussed in HRD-related fields for many years, rewarding individual performance with public recognition or financial remuneration typically has only a short-term impact (Rothwell, Sullivan, & McLean, 1995) and may facilitate ongoing resentment by individuals who were not recognized (Deming, 1982). Provided that managers are cognizant of the potential downsides, it may be more effective to develop collective rewards and recognition for group and organizational creativity or to spend energy identifying key ways in which the organization could make collective progress toward additional creativity that is celebrated organization-wide.

Conclusion

Although the extensive discussion in this article may create the misperception that creativity is widespread among a large number of employees in most organizations, that assumption could not be farther from the truth (Staw, 1995). Creative idea generation does not appear to be common for most individuals in organizations. The available evidence supports the notion that creativity is supported by positive role modeling, by positive, noncontrolling feedback behavior, by employee perceptions that creativity is valued, and by goal setting associated with creativity. These findings sup-

port the HRD literature and related practices that HRD professionals utilize in organization development and training and in individually oriented interventions aimed at increasing organizational creativity.

The amount and focus of research on individual creativity in workplace environments is increasing, and new insights regarding individual factors and the external influences associated with creativity are being understood in new ways. Research progress is important to HRD as it presents new opportunities to better understand the elements contributing to workplace creativity and provides insights into new ways to think about creativity overall. In fact, as discussed earlier, HRD is, in and of itself, a creative activity tapping available data and perspectives for decision making, action, and performance that will continue to benefit from creativity research. As HRD practitioners and scholars develop an awareness of current research and approaches to new creativity studies, we can look forward to further insight regarding creativity. Perhaps our combination of research, theory, and practice can lead to HRD practitioners and scholars not only being known to have expertise regarding creativity but also being identified as facilitators of creative ideas and outcomes.

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