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Novelty x Usefulness: Actor-level Effects and Cultural Influences on Creativity in Organizations

Kevyn Yong
HEC Paris
Department of Management and HR
yong@hec.fr

Michel W. Lander
HEC Paris
Department of Management and HR
lander@hec.fr

Pier Vittorio Mannucci
HEC Paris
Department of Management and HR
pier-vittorio.mannucci@hec.edu

Abstract

We delineate actor-level and cultural differences to examine the impact of culture on creativity in organizations. We conceptualize actor-level differences in terms of creativity-relevant processes, intrinsic motivation, and domain-relevant skills; and we conceptualize cultural differences in terms of the cultural dimensions of individualism, uncertainty avoidance, power-distance, and masculinity. Using meta-analytic techniques, we find different effects on creativity for each cultural dimension. We also find different effects for the interaction between actor-level differences and each cultural dimension. In discussing our findings, we highlight how organizations should place an emphasis on either the novelty or usefulness aspects of creativity to compensate for cultural tendencies.

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Abstract

We delineate actor-level and cultural differences to examine the impact of culture on creativity in organizations. We conceptualize actor-level differences in terms of creativity-relevant processes, intrinsic motivation, and domain-relevant skills; and we conceptualize cultural differences in terms of the cultural dimensions of individualism, uncertainty avoidance, power-distance, and masculinity. Using meta-analytic techniques, we find different effects on creativity for each cultural dimension. We also find different effects for the interaction between actor-level differences and each cultural dimension. In discussing our findings, we highlight how organizations should place an emphasis on either the novelty or usefulness aspects of creativity to compensate for cultural tendencies.

INTRODUCTION

Management scholars have been concerned with identifying factors that have positive effects on creativity in organizations. Defining creativity as the generation of novel and useful ideas or solutions (Amabile, 1996; Woodman, Sawyer, & Griffin, 1999), they have studied creativity extensively at the individual and group-levels of analysis (e.g. Shalley, Zhou, & Oldman, 2004; Sutton & Hargadon, 1996; Skilton & Dooley, 2010). This body of research can be categorized into the components of the componential theory of creativity (Amabile, 1983): actor-level differences in creativity-relevant skills, intrinsic task motivation, and domain-relevant skills explain creativity. A recent update of this theory includes a fourth component to account for work environment factors external to the actor (Amabile, 2012).

In addition, since organizations also face managerial challenges such as coordinating business units across different cultures, it is also important to identify how culture affects creativity in organizations (Chen, Leung, & Chen, 2009). In this article, we consider the effects of four cultural dimensions – individualism, uncertainty avoidance, power-distance, and masculinity – and how their interaction with actor-level differences affects creativity.

To test our hypotheses, we conducted a meta-analytic study. Meta-analysis provides the opportunity to overcome the complexity and practical challenges associated with collecting comparative data on both actor-level and cultural differences in a single study (Kirkman, Lowe, & Gibson, 2006). Specifically, it allows us to empirically test the moderating effects of the four cultural dimensions on a wide range of actor-level differences that have been established to have a positive effect on creativity in organizations (cf. Eden, 2002). To this end, we conducted a comprehensive literature search of management, psychology, and sociology research

journals to identify studies that examined creativity in organizational settings. The result was a database containing 132 studies.

Our study makes three contributions to the literature on creativity in organizations. First, we offer a comprehensive test of the componential theory of creativity to ascertain the relative strength of each of the four components on creativity in organizational settings. Second, we test for the impact of culture on creativity. Specifically, we find support for the moderating effects of culture. In so doing, we contribute to the scholarly interest in the link between culture and creativity in organizations. Finally, our findings suggest that, if the cultural context places a greater emphasis on novelty, organizations can foster creativity by focusing on the creativity components that beget usefulness; on the other hand, if the cultural context places a greater emphasis on usefulness, then organizations should focus on the creativity components that generate novelty.

THEORY

The Componential Theory of Creativity

Management scholars have established a wide range of actor-level differences and work environment factors that have positive effects on creativity in organizational settings, and that can be categorized into the four components of the componential theory of creativity (Amabile, 1983, 2012): three actor-level components, comprising creativity-relevant processes, intrinsic task motivation, and domain-relevant skills; and a component external to the actor, work environment factors.

Actor-level Components. Creativity-relevant processes include the "cognitive style and personality characteristics that are conducive to independence, risk-taking, and taking new perspectives on problems, as well as a disciplined work style and skills in generating ideas" (Amabile, 2012: 4). Scholars have examined cognitive

processes, cognitive style, and problem-solving approaches that foster creativity (e.g. Amabile, 1996; De Dreu & West 2001). For example, cognitive processes characterized by divergent thinking (Finke, Ward, & Smith, 1992), norm deviance and rule-breaking (Mainemelis, 2010), as well as experimentation and exploration (Madjar, Greenberg, & Chen, 2011), have been found to be positively related to the generation of new ideas. Similarly, cognitive styles characterized by openness to new experiences are associated with experimentation, risk-taking, and thinking differently (George & Zhou, 2001). Finally, creative cognition involves selecting and combining unique knowledge to generate new ideas (e.g. Kavadias & Sommer, 2009; Litchfield, 2008). Thus, the primary function of creativity-relevant processes is to create new links between ideas and concepts to generate novelty (Erez & Nouri, 2010; Sawyer, 2006).

Intrinsic task motivation is "the motivation to undertake a task or solve a problem because it is interesting, involving, personally challenging, or satisfying – rather than undertaking it out of the extrinsic motivation arising from contracted-for rewards, surveillance, competition, evaluation, or requirements to do something in a certain way" (Amabile, 2012: 4). Scholars have identified two ways in which intrinsic motivation fosters creativity. First, intrinsic motivation promotes a sense of freedom (Amabile, 1996), and thereby increases curiosity, learning, risk taking, and flexible thinking (Grant & Berry, 2011; Shalley, Zhou, & Oldham, 2004). Second, because creativity often involves a never-ending iterative trial-and-error process (Simonton, 2003), intrinsic motivation underlies the personal engagement and effort required to meet the arduous task demands of exploration and experimentation (Amabile, 1996; Grant & Berry, 2011).

Domain-relevant skills include the "knowledge, expertise, technical skills, intelligence, and talent in the particular domain where the problem-solver is working" (Amabile, 2012: 3). This is the knowledge base from which the individual or group draw to come up with ideas. In particular, a knowledge base characterized by greater expertise has been empirically demonstrated to be associated with greater creativity (e.g. Rodan & Galunic, 2004; Taylor & Greve, 2006). At the individual level, this includes personal attributes such as educational, employment, and personal experiences (e.g. Madjar, Oldham, & Pratt, 2002; Shin & Zhou, 2007) and, at the group level, cross-functional expertise (Keller, 2001; Sutton & Hargadon, 1996). Similarly, social network structures that provide exposure to diverse knowledge and expertise foster creativity (Fleming, Mingo & Chen, 2007; Perry-Smith, 2006). Moreover, domain-relevant skills are critical to the usefulness dimension of creativity because it shapes the extent to which new ideas meet existing rules and task constraints (Csikszentmihalyi, 1999; Ford & Gioia, 2000).

Hypothesis 1a: Actor-level creativity-relevant processes, intrinsic task motivation, and domain-relevant skills are positively related to creativity.

Work Environment Component. The work environment component refers to organizational factors that foster creativity (Amabile, 2012). In particular, scholars have focused on group and organizational characteristics (e.g. Amabile, 1996; Woodman et al., 1993; Zhou & George, 2001). For example, psychological safety fosters creativity because it encourages collaborators to openly voice their unique perspective without fear of criticism should they make a mistake or hold an opinion different from the prevailing consensus (De Dreu & West, 2001; Edmondson, 1999).

Similarly, leadership that inspires intrinsic motivation (Hirst, Van Knippenberg, & Zhou, 2009), self-efficacy (Tierney & Farmer, 2011), and autonomy (Oldham & Cummings, 1993), stimulate creativity. Others suggest that hierarchically rigid organizational structures stifle creativity (Hirst, Van Knippenberg, Chen, & Sacramento, 2011), whereas flatter, more organic structures stimulate creativity because the latter creates work environments characterized by open information exchange, constructive disagreement, and adaptation (Woodman et al., 1993). Similarly, creativity thrives in work environments that provide autonomy, emotional and managerial support, and are structured to meet the demands of creative work (Madjar et al., 2002; Shalley, Gilson & Blum, 2000; Zhou, 1998; Zhou & George, 2001).

Hypothesis 1b: Work environment factors characterized by knowledge diversity, openness, autonomy, learning, and flexibility are positively related to creativity.

Cultural Influences on Creativity

In addition to the different components of creativity, scholars have also considered the impact of culture on creativity. Culture has been conceptualized in several ways, with the dimensions of individualism, uncertainty avoidance, power-distance, and masculinity the most widely used framework (Hofstede, 2001). Scholars have used this framework to study the effects of culture on creativity through imprinting and social norms.

Cultural Influence through Imprinting. Culture influences creativity through the imprinting of cognitive and motivational processes that either activate or inhibit

creativity (Nisbett, Peng, Choi, & Norenzayan, 2001; Oyserman, Coon, & Kemmelmeier, 2002). This is founded on the theory that culture shapes how people view themselves and others, as well as the relationship between the two, which shapes the way they think (Markus & Kitayama, 1991). Hence, cultural dimensions that imprint nonconformity and independent thinking should produce more creative individuals and accomplishments than cultures that imprint conformity and interdependent thinking (Amabile, 1996; Sawyer, 2006; Shane, 1992).

Individualism and Creativity. Individualism emphasizes the "I", or independent self-construal (Brewer & Chen, 2007; Markus & Kitayama, 1991), where "everyone is expected to look after himself or herself and his or her immediate family" (Hofstede & Hofstede, 2005: 76). Collectivism, by contrast, emphasizes the "we", or interdependent self-construal (Brewer & Chen, 2007; Markus & Kitayama, 1991), where people are "integrated into strong, cohesive in-groups, which throughout people's lifetimes continue to protect them in exchange for unquestioning loyalty" (Hofstede & Hofstede, 2005: 76). Thus, individualism encourages uniqueness and thinking differently from others whereas collectivism encourages conformity,

The emphasis individualistic cultures place on non-conformity and deviance, encourages divergent thinking (Goncalo & Staw, 2006; Shane, 1992). Individualism also values actively monitoring the environment and collecting information from distant social circles, which facilitates access to diverse information. In contrast, the emphasis collectivistic cultures place on conformity and harmony encourages convergent thinking (Goncalo & Staw, 2006). Collectivism also values pre-planned career paths rather than rewarding deviance and exploration, which inhibits originality and flexibility.

H2a: Individualism is positively related to creativity.

Uncertainty Avoidance and Creativity. Uncertainty avoidance describes the degree to which people feel uncomfortable with uncertain and ambiguous situations (Hofstede, 2001; Hofstede & Hofstede, 2005). High uncertainty avoidance is associated with a preference for well-defined problem structures and procedures. Since well-defined problem structures constrain the ability to break out from existing rules and procedures (Amabile, 1996), high uncertainty avoidance limits the exploration and consideration of new possibilities. In contrast, low uncertainty avoidance is associated with a preference for ill-defined problem structures and procedures. Since ill-defined problem structures encourage risk taking (Madjar et al., 2011), low uncertainty avoidance encourages breaking away from existing rules and procedures to experiment with new ways of doing things (Amabile, 1983).

H2b: Uncertainty avoidance is negatively related to creativity.

Power-Distance and Creativity. Power-distance is defined as the extent to which the less powerful members of institutions and organizations within a culture expect and accept that power is unequally distributed (Hofstede, 2001; Hofstede & Hofstede, 2005). High power-distance cultures are hierarchical and bureaucratic which constrains independence and autonomy (Hirst et al., 2011). Low levels of communication and disagreement between superiors and subordinates characterize high power-distance cultures (Hofstede & Hofstede, 2005), limiting the knowledge exchange that fosters creativity (Perry Smith, 2006; Rodan & Galunic, 2004). Centralized authority, rigid control systems, and close monitoring also characterize

high power-distance cultures (Amabile, 1983; George & Zhou, 2001; Zhou, 2003); all of which decrease intrinsic motivation, thus inhibiting creativity (Amabile, 1996; Grant & Berry, 2011).

In contrast, low power-distance cultures are characterized by a limited dependence on superiors, a preference for consultative interactions between superior and subordinate, and control systems based on trust (Hofstede, 2001; Shane, 1992). Trust-based control systems encourage constructive feedback and foster psychological safety in voicing opinions (George & Zhou, 2001; Zhou, 1998). Trust-based control systems also foster intrinsic motivation and knowledge exchange (Ford & Gioia, 2000). Thus, low power-distance cultures encourage autonomy, agility, and adaptability (Hofstede & Hofstede, 2005).

H2c: Power-distance is negatively related to creativity.

Masculinity and Creativity. Within feminine cultures, there is a preference for cooperation, modesty, and caring for others (Hofstede, 2001). In contrast, there is a preference for individual achievement and assertiveness within masculine cultures. Feminine cultures value equality, cooperation, collaboration, and shared roles, while masculine cultures value equity, competition, performance, and a clear segregation of roles (Hofstede, 2001). Feminine cultures tend to resolve conflicts through compromise, while masculine cultures prefer competition.

The emphasis on collaboration in feminine cultures could be beneficial for creativity. Collaboration fosters creativity-relevant behaviors like active communication (Keller, 2001), participative decision-making (De Dreu & West, 2001), and feedback reception (Zhou & George, 2001). However, feminine cultures

also emphasize compromise and agreement. This inhibits dissenting opinions, thus reducing the likelihood of novel ideas that challenge the status quo (De Dreu & West, 2001).

In contrast, masculine cultures are characterized by an orientation towards performance and achievement, which have been found to be positively related to creativity (Zhou, 1998): individuals oriented towards achievement and performance have a preference for situations in which they can show their competence and voice their unique opinions to distinguish themselves from others, and are thus more likely to generate new ideas (Sutton & Hargadon, 1996). Moreover, masculinity has been found to be positively associated with openness to experience (Hofstede & McCrae, 2004). Since openness to experience encourages experimentation, acquiring new knowledge, and divergent thinking (George & Zhou, 2001; Madjar et al., 2011), masculinity should be positively associated with creativity.

Thus, the emphasis on collaboration in feminine cultures could foster creativity but the emphasis on compromise and agreement hinders the benefits of collaboration. In contrast, the emphasis on competition and openness to experience in masculine cultures encourages creativity to distinguish oneself from others.

Hypothesis 2d: Masculinity is positively related to creativity.

Cultural Influences through Social Norms. In addition to imprinting effects, culture also influences creativity through social norms (Morris & Leung, 2010). This is founded on the theory that different cultures can achieve similar levels of creativity but via a different emphasis on novelty and usefulness (Simonton & Ting, 2010). Specifically, the social norms approach to explaining cultural differences in creativity

posit that cultures that value independence encourage behaviors that beget novelty and cultures that value interdependence encourage behaviors that beget usefulness (Erez & Nouri, 2010; Morris & Leung, 2010).

Novelty represents the extent to which an idea is new or different when compared to existing ideas, and usefulness represents the extent to which an idea is an appropriate response to a problem. Thus, both novelty and usefulness are necessary for creativity, i.e. creativity = novelty x usefulness (Simonton & Ting, 2010). This implies that creativity can be improved by increasing novelty while keeping usefulness constant or increasing usefulness while keeping novelty constant.

We build on the social norms approach to propose that culture interacts with each of the actor-level components of creativity. Because creativity-relevant processes, intrinsic task motivation, and domain-relevant skills have been differentially linked to the novelty and usefulness aspects of creativity (Csikszentmihalyi, 1999; Ford & Gioia, 2000), we propose that creativity is enhanced when a cultural dimension complements a creativity component. Since creativity-relevant processes like divergent thinking, experimentation, and exploration foster novelty, then this component should complement cultural dimensions that beget usefulness. Similarly, since intrinsic task motivation underpins exploration, learning, and perseverance, then this component should also complement cultural dimensions that beget usefulness. Finally, since domain-relevant skills represent an actor's internalization of domain knowledge, which determines the ability to recognize useful ideas, then this component should complement cultural dimensions that beget novelty.

Individualism and Novelty x Usefulness. Because individualism places a greater value on uniqueness, autonomy, and independent thinking (Hofstede, 2001), as compared to collectivism which emphasizes conformity, consensus, and

interdependent thinking (Brewer & Chen, 2007; Goncalo & Staw, 2006), individualistic cultures place a greater emphasis on novelty, whereas collectivistic cultures place a greater emphasis on usefulness (De Dreu, 2010; Erez & Nouri, 2010; Morris & Leung, 2010). Since domain-relevant skills enhance usefulness, it should have a greater positive effect on creativity in individualistic cultures. Similarly, since creativity-relevant processes and intrinsic task motivation enhance novelty, they should have a greater positive effect on creativity in collectivistic cultures.

Hypothesis 3a: The positive effect of creativity relevant processes is greater in collectivistic cultures.

Hypothesis 3b: The positive effect of intrinsic task motivation is greater in collectivistic cultures.

Hypothesis 3c: The positive effect of domain-relevant skills is greater in individualistic cultures.

Uncertainty Avoidance and Novelty x Usefulness. There is a preference for ill-defined problem structures and a greater emphasis on novelty when finding solutions within uncertainty avoidant cultures. In contrast, there is a preference for well-defined problem structures and a greater emphasis on usefulness when finding solutions (Amabile, 1996; Simonton, 2003). Since domain-relevant skills enhance usefulness, it should have a greater positive effect on creativity in low uncertainty avoidant cultures. Similarly, since creativity-relevant processes and intrinsic task

motivation enhance novelty, they should have a greater positive effect on creativity in high uncertainty avoidant cultures.

Hypothesis 4a: The positive effect of creativity-relevant processes is greater in high uncertainty avoidant cultures.

Hypothesis 4b: The positive effect of intrinsic task motivation is greater in high uncertainty avoidant cultures.

Hypothesis 4c: The positive effect of domain-relevant skills is greater in low uncertainty avoidant cultures.

Power-Distance and Novelty x Usefulness. Low power-distance cultures support a collaborative approach to thinking, favoring the open exchange of ideas, especially unique ideas that differ from the consensus (Erez & Nouri, 2010), thus emphasizing novelty. In contrast, the hierarchical system in high power-distance cultures is based on inequality and the centralization of power is preferred (Hirst et al., 2011). Because there is a preference for autocratic decisions and dependence within high power-distance cultures and a preference for autonomy and independence within low power-distance cultures (Hirst et al., 2011; Hofstede, 2001), than high power-distance cultures place a greater value on usefulness whereas low power-distance cultures place a greater value on novelty (Erez & Nouri, 2010). Since domain-relevant skills enhance usefulness, it should have a greater positive effect on creativity in low power-distance cultures. Similarly, since creativity-relevant

processes and intrinsic task motivation enhance novelty, they should have a greater positive effect on creativity in high power-distance cultures.

Hypothesis 5a: The positive effect of creativity-relevant processes on creativity is greater in high power-distance cultures.

Hypothesis 5b: The positive effect of intrinsic task motivation on creativity is greater in high power-distance cultures.

Hypothesis 5c: The positive effect of domain-relevant skills is greater in low power-distance cultures.

Masculinity and Novelty x Usefulness. Because there is a preference for individual distinction and openness to new experiences within masculine cultures whereas there is a preference for cooperation and agreement within feminine cultures (Hofstede, 2001; Hofstede & Hofstede, 2005), then masculine cultures place a greater emphasis on novelty whereas feminine cultures place a greater emphasis on usefulness. Given that domain-relevant skills enhance usefulness, it should have a greater positive effect on creativity in masculine cultures. Similarly, given that creativity-relevant processes and intrinsic task motivation enhance novelty, they should have a greater positive effect on creativity in feminine cultures.

Hypothesis 6a: The positive effect of creativity-relevant processes is greater in feminine cultures.

Hypothesis 6b: The positive effect of intrinsic task motivation is greater in feminine cultures.

Hypothesis 6c: The positive effect of domain-relevant skills is greater in masculine cultures.

METHODS

Empirical Approach

Meta-analysis is a quantitative method used to combine research evidence from prior studies (Hedges & Olkin, 1985). As a method, meta-analysis is particularly suitable for extending theory. Meta-analysis allows us to build on existing empirical work to model across-study differences that would otherwise be too complex or impossible to model in primary studies. Hence we used a two-step approach to test our hypotheses.

First, we used artifact-corrected meta-analyses (ACMA, Hunter & Schmidt, 2004) to uncover the effect of each of the components of creativity on creativity in organizational settings. We chose the ACMA as our analytical strategy because our goal was to provide a "best" test of the research on creativity in organizations and not to offer an "undistorted" summary of prior studies (Eden, 2002). ACMA allows for the correction of statistical artifacts such as sampling error, measurement error, and range restriction. Thus, ACMA might be described as one of the most robust forms of hypotheses-testing procedures suited for the evaluation of scientific theory (Hunter & Schmidt, 2004). ACMA is particularly suitable for the meta-analysis of effect sizes drawn from primary data collected from survey methods, which was the case for much of our sample. We calculated the mean effect sizes (mean rho) for the studies that met our sampling criteria. Effect sizes were calculated using bivariate

correlations drawn from correlation matrices and partial correlations drawn from, among others, regression models. Partial correlations were used to calculate the effect size of a study that was published in a journal that did not publish bivariate correlation matrices. We obtained 774 effect sizes from 132 studies, of which 745 were from bivariate correlations. The mean effect sizes were subsequently used to calculate confidence intervals, which indicated the hypothesized relationships' generalizability.

Second, we tested for the presence of heterogeneity in the retrieved mean effect size distribution. We modeled the heterogeneity in the underlying effect sizes through meta-analytic regression analysis (MARA; Lipsey & Wilson, 2001). MARA is a special type of weighted least squares regression analysis designed to regress the effect size estimates on the theoretical predictors, described in hypotheses 2 through 6, to explain between-study differences in effect sizes (Hedges & Olkin, 1985). To account for differences in effect sizes due to sample size, each effect is given a weight that is inversely proportional to the variance in the study, i.e. inverse variance weight (Hedges & Olkin, 1985). Thus, MARA allowed us to assess the relative explanatory power of each of our variables because they directly compete with each other in the same statistical analysis (Miller & Cardinal, 1994).

Artifact-Corrected Meta-Analysis

Literature search. The value of any meta-analytic study is ultimately determined by the inclusion of a "large number of high-quality replication studies" (Eden, 2002: 841). We used two complementary literature retrieval procedures to uncover as many studies as possible that fell within our scope of inquiry in order to avoid missing those studies outside of regular purview (White, 1994: 44). First, we examined three computerized databases (ABI/INFORM Global, EBSCO, and JSTOR) to uncover studies that were published in the Financial Times journals and creativity

journals between 1950 (year of the first seminal publication on creativity in *American Psychologist* by J. P. Guilford) and 2012 by using the keywords "creative" and "creativity". We decided *not* to use the keywords "innovative" and "innovation" because we regard creativity and innovation as two different constructs, the former referring to the generation of novel and useful ideas or solutions, the second to the implementation of these ideas or solutions (Amabile, 1996; Fleming et al., 2007). The concepts of creativity and innovation, however, are often used interchangeably. Moreover, some objective measures of creativity, for example patents, are similarly used to measure innovation. We therefore included studies that used the label "innovation" to mean creativity, using measurement scales that were originally developed to measure creativity, and studies that included measures related to creativity. Second, we used a snowballing approach to backward-trace all references reported in the research reports of the studies identified in the first two steps and in review articles on creativity in order to check for any studies that had not yet been included in our sample. This approach resulted in a database of 132 studies.

We used four heuristics to determine which studies to include in our sample (cf. Lipsey & Wilson, 2001). First, a study had to report at least one relationship between an operationalization of one of the components of creativity (as described in the componential theory of creativity) and an operationalization of creativity as an outcome variable. Table 1 summarizes the definitions of our theoretical constructs and examples of representative operationalizations. Second, a study had to contain an effect size estimate either in the form of a bivariate correlation or any effect size (e.g. t-values) that allows for the calculation of a partial correlation (Hunter & Schimdt, 2004; Rosenthal, 1991). Third, the effect size had to refer to creativity within an organizational setting as we are looking to assess the influence of culture on creativity

in organizations. Therefore, studies using student samples or based in non-organizational settings are *excluded* from our sample. Fourth, we decided to concentrate only on those variables that were theoretically expected to have a positive effect on creativity in organizational settings. Our approach led to 774 effect sizes from 132 studies, 745 of which were bivariate correlations.

Insert Table 1 about here

Coding and data set. In a meta-analysis, the unit of analysis is the individual study (Hedges & Olkin, 1985). Each study, however, may contain more than one test of the focal relationship. Hence, the total number of effect sizes exceeds the number of studies in the sample. Two authors jointly coded the effect sizes into their respective categories as described in Table 1.

Meta-analytic calculations. ACMA allows for the correction of artifacts due to study methodology used in primary research (Eden, 2002). The Hunter and Schmidt (2004) approach allows us to correct for the following artifacts: (1) sampling error, (2) measurement error in the dependent variable, (3) measurement error in the independent variable, (4) dichotomization of a continuous dependent variable, (5) dichotomization of a continuous independent variable, (6) range restriction in the dependent variable, (7) range restriction in the independent variable, and (8) downward bias in the retrieved correlation coefficient due to sampling for a non-randomly distributed population of effect sizes (Hunter & Schmidt, 2004: 55-56). We individually corrected for measurement error in the predictor and outcome variables by using the Cronbach's alpha, provided in primary studies.

Meta-Analytic Regression Analyses

Variables. We used MARA to test hypotheses 2 to 6. We included the four cultural dimensions of individualism, uncertainty avoidance, power-distance, and masculinity. Using Hofstede's (2001) cultural dimension scores, we assigned each study its relative score on each dimension based on the country from which the primary data of the study was drawn from. For studies for which the country was unknown (2.8% of the sample), we assigned the mean-imputed score for each cultural dimension.

We also included a set of non-hypothesized study-level control variables, to assess whether differences in publication characteristics, methodological and theoretical specifications, and organizational characteristics produce differences in effect sizes.

For publication characteristics, we included the publication year and the journal in which the study was published, i.e. AMJ, ASQ, JAP and JOB with all other journal outlets as reference category.

For methodological specifications, we coded whether creativity was measured subjectively and whether the primary study was based solely on primary data sources. We coded as subjective the self-assessments of creativity and all those measures in which experts, supervisors, or peers use rating-scales to make subjective judgments of the creativity of a person, process, or outcome.

For theoretical specifications, we used the componential theory of creativity (Amabile, 1983; 2012). Specifically we coded whether the effect size is related to creativity-relevant processes, intrinsic task motivation, domain-relevant skills, or work environment factors, with the last as the reference category.

For organization characteristics, we coded for whether the study sample was drawn from a private or public organization, with mixed samples as the reference

category; and whether the sample was drawn from small or big organizations, with large organization as the reference category.

Analysis. We employed a modified version of the weighted least squares (WLS) regression to analyze the relationship between the various moderators and the effect sizes. We chose a weighted regression because the effect sizes were based on different sample sizes. Larger sample sizes are associated with more precise estimations of the mean effect size (mean rho) as compared to estimations from smaller samples. In order to mitigate this problem, Hedges and Olkin (1985) showed that the optimal weights are inversely proportional to the variance in each study. Weighted regression analysis however suffers from the problem of incorrect estimation of standard errors and as a consequence incorrect estimation of the significance levels for the MARA. This problem however is overcome by computing the correct standard error through the use of the incorrect standard error and the mean-square residual. Dividing the unstandardized regression coefficient by its correct standard error, a subsequent significance test (z-test) can then be used (Lipsey & Wilson, 2001). We used these modifications in our analysis.

For MARA, there are two estimation options for modeling between-study differences in effect sizes. The first is the fixed-effects model. With this estimation procedure it is assumed that all between-study differences can be attributed to organization-level sampling error and systematic variance captured by the moderator variables (Lipsey & Wilson, 2001). The second, when a significant proportion of heterogeneity is not modeled, is to use the mixed-effects model. Variability is attributed to between-study differences, sampling error, and to a remaining unmeasured and immeasurable random component (Lipsey & Wilson, 2001). Because the mixed-effects model produces a more conservative estimation, has a better fit with

the heterogeneous effect size distribution, and has more accurate Type I error rates (Lipsey & Wilson, 2001; Overton, 1998), we used the mixed effects model.

RESULTS

Synthesizing Creativity Research: ACMA

We begin by reporting a set of analyses detailing how well the different components of creativity positively affect creativity in organizational settings (Table 2). Table 2 commences with an aggregated test of all effect sizes that theoretically have a positive effect on creativity. The mean effect size of all these studies is .18 with a confidence interval of .18 to .19, indicating a strong positive relationship. Subsequently, we disaggregated the composite score into its underlying components.

Insert Table 2 about here

When we look at the respective explanatory power of the different creativity components, we find the intrinsic task motivation component to have the strongest relationship (ρ = .23), albeit the number of effect sizes on which it is based is small as compared to the other components (k=32). The work environment factors component has the second largest mean effect size (ρ = .22), closely followed by the creativity-relevant processes component (ρ = .19). Although comparatively smaller than the other three components, the domain-relevant skills component has relatively large mean effect sizes (ρ = .10). In all we find support for hypotheses 1a and 1b.

Investigating Cultural Influences: MARA

If the homogeneity analysis in the ACMA reveals that the distribution of effect sizes is heterogeneous, there are real between-study differences that can account for these differences. For all effect sizes, the I^2 exceeds a high level of heterogeneity threshold

set (Heudo-Medina, Sanchez-Meca, Marin-Martinez, & Botella, 2006), hence further moderator analysis is warranted. These results, presented in Table 3, will be discussed next. Below we will only discuss the full model, i.e. model 6.

Insert Table 3 about here

Publication characteristics variables. As a set of controls, we included the publication year and the journal where the study was published. We find that more recent publications show weaker effect sizes ($p < .01$). For publication outlet, we find that the managerial journals AMJ and ASQ to show weaker effect sizes as compared to the references group of journals, albeit only ASQ is significant ($p < .01$). In contrast, the psychology journals JAP and JOB show positive effects but are not statistically significant.

Methodological specification variables. Creativity research varies in terms of the methodological specifications researchers make. We find that primary data sources show significantly stronger effect sizes ($p < .01$). Moreover, studies using subjective measures of creativity showed stronger effects ($p < .01$) than studies using objective measures.

Theoretical specification variables. To test for the effects of the different components of creativity, we included dummy variables for each component with the work environment factors as the reference category. Mirroring the ACMA results, both the creativity-relevant processes and the domain-relevant skills components have statistically smaller effect sizes as compared to work environment factors component ($p < .01$). The intrinsic task motivation component does not differ significantly from the reference component.

Organization characteristics variables. Studies using samples from private and public organizations show smaller effect sizes as compared to samples that have both public and private organizations ($p < .01$). Studies using samples from smaller organizations also show larger effect sizes, albeit only at $p < .10$.

Cultural Influence through Imprinting. For the relationship between culture and creativity as presented in hypotheses 2a, b, c and d, we find support for hypotheses 2c and 2d in that power-distance is negatively related to creativity ($p < .01$) and masculinity is positively related to creativity ($p < .01$). In contrast, we reject hypotheses 2a because we found, counter to our predictions, individualism to be negatively related to creativity ($p < .01$). Finally, we did not find a significant relationship between uncertainty avoidance and creativity, even though we predicted a negative relationship in hypothesis 2b.

Cultural Influence through Social Norms. We found higher creativity when individualism is combined with the creativity-relevant processes and domain-relevant skills components ($p < .01$), thus supporting hypothesis 3c and providing counter-hypothesized effects for hypothesis 3a. There was no significant effect when individualism is combined with intrinsic task motivation; hypothesis 3b was not supported. For uncertainty avoidance, we did not find any significant effects when uncertainty avoidance is combined with the three components of creativity, thus hypotheses 4a, 4b, and 4c were not supported. For power-distance, we find higher creativity when power-distance is combined with the creativity-relevant processes ($p < .01$) and domain-relevant skills components ($p < .05$), thus supporting hypotheses 5a and finding counter-hypothesized effects for 5c. There was no significant effect when power-distance is combined with intrinsic task motivation; hypothesis 5b was not supported. Finally, for masculinity, we did not find any significant effects when

masculinity was combined with any of the components of creativity, thus hypotheses 6a, 6b, and 6c were not supported.

Robustness Check using the GLOBE Study Measures

In addition to Hofstede's measures, the influence of culture has also been studied using measures developed through the Global Leadership and Organizational Behavior Effectiveness (GLOBE) study (House et al., 2004). Moreover, the cultural dimensions defined in the GLOBE study were developed based on Hofstede's original cultural dimensions. Hence, we also ran our analyses using the GLOBE measures as a robustness check. Results are presented in Table 4. We found consistent results for the GLOBE measure most conceptually similar to the corresponding Hofstede measure (i.e., in-group collectivism). We also found contrasting results for uncertainty avoidance, power-distance, and masculinity. However, the contrasting results differ across measures in the same way that the GLOBE dimensions of uncertainty avoidance, power-distance, and masculinity are conceptually different from the corresponding Hofstede dimensions. In sum, since the difference in results across both measures corresponds to the theoretical differences between GLOBE and Hofstede, the robustness check provides support for our analysis.

Insert Table 4 about here

DISCUSSION

We delineated the effect of culture from actor-level differences to examine the influence of culture on creativity in organizations. Using meta-analytic methods to test our hypotheses, we found actor-level differences – in terms of creativity-relevant processes, intrinsic task motivation, and domain-relevant skills – to be positively

related to creativity in organizations; differences in terms of work environment factors were also found to have positive effects. We also found cultural differences in individualism, power-distance, and masculinity to have significant effects on creativity whereas uncertainty avoidance had no effect. Moreover, individualism and power-distance interacted with actor-level components of creativity. Specifically, our results indicate that collectivism, low power-distance, and masculinity foster creativity, and when both individualism and high power-distance complement creativity-relevant processes and domain-relevant skills to achieve greater levels of both novelty and usefulness. In the following discussion, we highlight three main contributions to the study of culture and creativity in organizations.

The Componential Theory of Creativity

We examined the effects of actor-level differences on creativity in terms of creativity-relevant processes, intrinsic task motivation, and domain-relevant skills (Amabile, 1983). We also examined the effects of work-environment factors external to the actor (Amabile, 2012). In so doing, we find comprehensive support for the componential theory of creativity in organizational settings. Interestingly, we found intrinsic task motivation and work environment factors to have significantly stronger effect sizes than creativity-relevant processes and domain-relevant skills. This confirms the critical role of intrinsic motivation (Amabile, 1996; Grant & Berry, 2011), and lends support to calls to more closely investigate the effects of the work environment (George, 2007; Shalley et al., 2004). Moreover, since work environment factors includes extrinsic motivators that undermine intrinsic task motivation and organizational mechanisms for developing new ideas (Amabile, 2012), a question for future research is whether the components of creativity-relevant processes, domain-relevant skills, and intrinsic task motivation are mediators of the relationship between

work environment factors and creativity. Alternatively, since creativity-relevant processes, domain-relevant skills, and intrinsic task motivation jointly impact creativity (Amabile, 1983), future research could also consider if creativity in organizations is better explained by studying the interactions between actor-level differences and work environment factors.

Cultural Influence through Imprinting

We also contribute to the study of the imprinting effects of culture on creativity by finding several unexpected effects. In finding a positive effect of low power-distance on creativity, we provide evidence in support of the view that reducing hierarchy fosters creativity (e.g. Hirst et al, 2011). We also found masculinity to have a positive effect on creativity. This lends support to the view that creativity is strongly associated with a strong drive for personal success and achievement (Shalley et al., 2009). However, that masculinity is also associated with a preference for material reward of success may seem to contradict the oft-mentioned negative link between extrinsic motivation and creativity. Research, however, has shown that extrinsic motivation only negatively affects creativity when the form of material reward is perceived as purely a financial gain (Amabile, 1996). If rewards are perceived to "confirm people's competence (e.g. by recognizing the value of their work), or enable them to become more deeply involved in work that they are excited about (e.g. by giving them more resources to work effectively), intrinsic motivation and creativity might be actually enhanced" (Amabile, 2012: p. 5). Although the effects of power-distance and masculinity went in the expected direction, we found some unexpected results for the other cultural components.

First, we found no effects for uncertainty avoidance. Uncertainty avoidance was expected to have an effect because creativity is best applied to solving ill-defined

problem tasks (Amabile, 1996). However, those low in uncertainty avoidance run the risk of being stuck in a never-ending state of exploration and experimentation without ever committing to a solution or tangible action (Csikszentmihalyi, 1999; Simonton, 2003). Perhaps implementing novel ideas into useful solutions requires a high need for closure (Chiu, Morris, Hong, & Menon, 2000), which is defined as the desire to resolve ambiguous situations. Thus, it may be that the link between uncertainty avoidance and creativity depends on the extent to which the need for closure is also present.

Second, we found that collectivism, and not individualism, predicts higher creativity. This is an interesting result because it suggests that the link between collectivism and creativity might be different from the prevailing view that individualism fosters creativity because it encourages independent thinking and novelty whereas collectivism encourages conformity and usefulness (Goncalo & Staw, 2006). For one, collectivism could be fostering an inclusive approach where every idea and perspective is considered during problem solving such that there is a more open and effective exchange of knowledge and support. This sort of inclusive approach underpins effective group brainstorming that lead to creativity (Sutton & Hargadon, 1996). This is consistent with research showing that taking the perspective of others results in ideas that are more useful (Mohrman, Gibson, & Mohrman, 2001). More recently, perspective-taking was found to mediate the relationship between prosocial motivation and creativity (Grant & Berry, 2011). Thus, since prosocial motivation is characteristic of collectivism, this could explain our finding that collectivism fosters creativity.

Furthermore, the positive effect of collectivism suggests that the usefulness aspect of creativity plays a different role in the assessment of creativity in

organizations than previously thought. For instance, since we observed that collectivism is associated with greater creativity than individualism, and scholars have argued that collectivistic cultures place a greater value on usefulness compared to novelty (e.g. Erez & Nouri, 2010; Morris & Leung, 2010), then usefulness may not merely refer to the appropriateness of a solution but the utility, or added-value, of the new solution. That is, the assessment of creativity in organizations may have less to do with novelty meaning *being different* from other existing solutions but novelty meaning *being better* than existing solutions in producing new products, meeting customers' needs, solving problems, etc. Thus, creativity in organizations may reflect the goal of achieving usefulness in novel ways as opposed to the conventional belief of creativity as achieving novelty in useful ways. This is a research question that future research might address both theoretically and empirically.

Cultural Influence through Social Norms

Finally, we make a contribution to the social norms approach by examining the interaction effects between culture and actor-level differences. Building on the concept of creativity as the multiplication of novelty and usefulness (Simonton & Ting, 2010), we predicted that creativity is best achieved when cultural characteristics complement actor-level characteristics in fostering novelty and usefulness. For instance, since creativity-relevant processes are associated with novelty whereas collectivism is associated with usefulness, we expected the positive effect of creativity-relevant processes to be greater in collectivistic cultures.

However, while we found the positive effect of creativity-relevant processes on creativity to be greater for high power-distance cultures. as expected, we unexpectedly found the positive effect of creativity-relevant processes to also be greater for individualistic cultures. One possible explanation is that creativity-relevant

processes also encompass convergent thinking (Sawyer, 2006; Simonton, 2003). Since individualism fosters the generation of novel ideas, creativity-relevant processes in the form of convergent thinking could serve to increases the usefulness of these novel ideas (Sawyer, 2006).

Similarly, while we found the positive effect of domain-relevant skills to be greater in individualistic cultures as expected, we unexpectedly found the positive effect of domain-relevant skills to be greater for high power-distance cultures. One possible explanation is that domain-relevant skills also provide exposure to knowledge diversity and alternative perspectives (Amabile, 1983; Rodan & Galunic, 2004). Since the preference for dependence in high power-distance begets usefulness, domain-relevant skills in the form of exposure to knowledge diversity could serve to increase the novelty of the useful ideas generated by high power-distance.

Overall, we make a theoretical and empirical contribution by integrating the componential theory of creativity with the social norms approach to explain cultural differences in creativity. Integrating the componential theory of creativity with the social norms approach also provides a tangible remedy to the creative shortcomings of a given cultural context. Given that creativity = novelty x usefulness (Simonton & Ting, 2010), we can impute the main effects of the actor-level components from our analyses into the equation: creativity = (creativity-relevant processes + intrinsic task motivation) x domain-relevant skills = (.19 + .23) x .10 = .042. Thus, organizations can foster creativity in collectivistic cultures by placing a greater emphasis on creativity-relevant skills and intrinsic task motivation relative to domain-relevant skills. For instance, with an increase of .04 for both creativity-relevant processes and intrinsic task motivation with no change for domain-relevant skills), we get creativity = (.23 + .27) x .10 = .050. Similarly, organizations can foster creativity in

individualistic cultures by placing a greater emphasis on domain-relevant skills relative to creativity-relevant skills and intrinsic task motivation. For instance, with an increase of .04 for domain-relevant skills with no change for both creativity-relevant processes and intrinsic task motivation), we get creativity = (.19 + .23) x .14 = .059.

In sum, incorporating the social norms approach with the componential theory of creativity leads to either *creativity = (creativity-relevant processes + intrinsic task motivation) x (cultural dimensions that emphasize usefulness)* or *creativity = (cultural dimensions that emphasize novelty) x (domain-relevant skills)*.

Conclusion

We make a theoretical and empirical contribution to the research on culture and creativity by showing that creativity can be fostered across cultures by placing a greater emphasis on the aspect of creativity that has been underemphasized in a given cultural context. Future contributions to a theory of culture and creativity might focus on identifying the mechanisms that delineate the imprinting effects from the social normative effects of culture on creativity. For instance, researchers could examine how imprinting effects and social normative effects of culture might differential affect the interplay between the four components of creativity-relevant processes, intrinsic task motivation, domain-relevant skills, and work environment factors.

We conclude with a practical implication for managing creativity in organizations. Our research suggests that managers interested in fostering creativity should develop actor-level differences that complement the cultural differences within which their organization is situated. For example, new product development project managers working in individualistic cultures will find it advantageous to be mindful in ensuring that team members acquire the necessary domain-relevant skills and creativity-relevant processes to help them develop the usefulness aspects of their new

products. Conversely, managers working in collectivistic cultures will find it advantageous to ensure a sufficient focus on the novelty aspects of their new products. This approach of identifying the normative expectations of a given cultural context and then focusing on acquiring and engaging the creativity components that complement these normative expectations will foster creativity in any culture.

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Table 1 Construct Definitions and Representative Measures

Component	Construct definition	Representative measures
Domain-relevant skills	Domain-relevant skills include the "knowledge, expertise, technical skills, intelligence, and talent in the particular domain where the problem-solver is working – such as product design or electrical engineering" (Amabile, 2012: 3)	*e.g. Knowledge stock and use* (Sung & Choi, 2012); *Knowledge diversity* (Rodan & Galunic, 2004; Taylor & Greve, 2006).
Creativity-relevant processes	Creativity-relevant processes include the "cognitive style and personality characteristics that are conducive to independence, risk-taking, and taking new perspectives on problems, as well as a disciplined work style and skills in generating ideas" (Amabile, 2012: 4).	*e.g. Experimentation and exploration* (Madjar, Greenberg, & Chen, 2011); Cognitive style (De Stobbleleir, Ashford, & Buyens 2011); *Openness to experience & risk taking* (George & Zhou, 2001)
Intrinsic task motivation	Intrinsic task motivation is "the motivation to undertake a task or solve a problem because it is interesting, involving, personally challenging, or satisfying – rather than undertaking it out of the extrinsic motivation arising from contracted-for rewards, surveillance, competition, evaluation, or requirements to do something in a certain way (Amabile, 2012: 4).	*e.g. Intrinsic motivation* (Grant & Berry 2011; Shalley, Gilson, & Blum 2009).
Work environment factors	The work environment refers to the organizational factors that "have been shown to undermine intrinsic motivation, as well as a number of other factors in the environment that can serve as obstacles or as stimulants to intrinsic motivation and creativity" (Amabile, 2012: 4).	*e.g. Leadership style* (Hirst, Van Dick, & Van Knippenberg, 2009); *Creative coworkers* (West & Anderson, 1996; Zhou, 2003); *Organizational climate and culture* (Gilson & Shalley, 2004); *Support for creativity* (Zhou & George, 2001); *Job and task characteristics* (George & Zhou 2001)

Table 2 ACMA Results Creativity Components

	K	N	Mean rho	Wsdr	Ci rho 95%	Q	P	I^2
Positive	774	3653074	0.18	0.08	0.18 : 0.19	22588	0.000	96.6%
Domain skills	146	1392702	0.10	0.08	0.08 : 0.12	7747	0.000	98.1%
Creative process	316	1094511	0.19	0.07	0.18 : 0.21	4924	0.000	93.6%
Task motivation	32	15792	0.23	0.19	0.16 : 0.31	563	0.000	94.5%
Work environment	280	1150070	0.22	0.09	0.20 : 0.23	8425	0.000	96.7%

[a] k = number of effect sizes; N = total sample size; mean $\tilde{n}$ = estimate of population correlation; $WSD_{\tilde{n}}$ = weighted standard deviation of mean $\tilde{n}$; $CI_{mean\ \tilde{n}}$ 95% = 95 percent confidence interval for mean $\tilde{n}$; Q = Cochran's homogeneity test statistic; p = probability of Q; I^2 = scale-free index of heterogeneity.

Table 3 MARA Results

(K = 774)	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	.1742**	.0964**	.1465**	.1987**	.2214**	.2078**
Interactions						
Power-distance x domain skills						.0036*
Power-distance x creativity processes						.0075**
Power-distance x task motivation						.0114
Individualism x domain skills						.0043**
Individualism x creativity processes						.0028**
Individualism x task motivation						.0007
Masculinity x domain skills						.0006
Masculinity x creativity processes						-.0003
Masculinity x task motivation						.0160
Uncertainty avoidance x domain skills						.0018
Uncertainty avoidance x creativity processes						.0008
Uncertainty avoidance x task motivation						.0052
Cultural dimensions variables						
Power-distance					-.0001	-.0048**
Individualism					-.0010**	-.0032**
Masculinity					.0008*	.0016**
Uncertainty avoidance					-.0003	-.0005
Organizational level variables						
Small organization				.03406**	.0355**	.0244†
Private organization				-.0625**	-.0724**	-.0669**
Public organization				-.1195**	-.1102**	-.1048**
Theoretical variables						
Domain-relevant skills			-.1111**	-.1210**	-.1252**	-.1176**
Creativity-relevant processes			-.0457**	-.0529**	-.0578**	-.0625**
Intrinsic task motivation			.0234	.0220	.0200	-.0581
Methodological variables						
Primary data source		.0493**	.0158	.0129	.0215	.0499**
Creativity measured subjectively		.0593**	.0833**	.0937**	.0801**	.0607**
Publication variables						
Publication year	-.0021**	-.0019**	-.0022**	-.0022**	-.0031**	-.0030**
AMJ	.0030	-.0005	-.0073	-.0070	-.0230*	-.0164
ASQ	-.0858**	-.0724**	-.0398	-.0440†	-.0424†	-.0678**
JAP	.0540**	.0263*	.0258*	.0356**	.0156	.0126
JOB	.0584**	.0328†	.0215	.0177	.0092	.0229
R^2	.0313	.0627	.0946	.1092	.1199	.1754
Model Q	94.78**	196.75**	249.09**	317.19**	350.34**	536.74**
Residual Q	2930.51**	2943.60**	2283.70**	2588.25**	.2570.68**	2523.36**
Total Q	3025.29**	3140.35**	2632.73**	2905.43**	2921.02**	3060.10**

[b] † sig. 0.1; * sig. 05; ** sig. 0.01 (all based on two-tailed tests).

Table 4 MARA Results with GLOBE measures

(K = 774)	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	.1742**	.0964**	.1465**	.1987**	.2195**	.2142**
Interactions						
Power-distance x domain skills						-.0285
Power-distance x creativity processes						-.1389†
Power-distance x task motivation						.2700
Institutional collectivism x domain skills						-.1136†
Institutional collectivism x creativity processes						.0392
Institutional collectivism x task motivation						-.4959
In-group collectivism x domain skills						-.0815
In-group collectivism x creativity processes						-.2303**
In-group collectivism x task motivation						-1.2109
Assertiveness x domain skills						.0271
Assertiveness x creativity processes						.1058**
Assertiveness x task motivation						.1206
Uncertainty avoidance x domain-skills						-.1400**
Uncertainty avoidance x creativity-processes						-.0964**
Uncertainty avoidance x task motivation						-.2996
Country level variables						
Power-distance					.0772*	.1759*
Institutional Collectivism					.0185	.0450
In-group Collectivism					.0256	.1765**
Assertiveness					-.0065	-.0687**
Uncertainty avoidance					.0515**	.1227**
Organizational level variables						
Small organization				.03406**	.0334*	.0276*
Private organization				-.0625**	-.0714**	-.0732**
Public organization				-.1195**	-.1119**	-.1135**
Theoretical variables						
Domain-relevant skills			-.1111**	-.1210**	-.1264**	-.1155**
Creativity-relevant processes			-.0457**	-.0529**	-.0572**	-.664**
Intrinsic task motivation			.0234	.0220	.0190	-.0206
Methodological variables						
Primary data source		.0493**	.0158	.0129	.0195	.0399*
Creativity measured subjectively		.0593**	.0833**	.0937**	.0826**	.0733**
Publication variables						
Publication year	-.0021**	-.0019**	-.0022**	-.0022**	-.0029**	-.0030**
AMJ	.0030	-.0005	-.0073	-.0070	-.0234*	-.0209†
ASQ	-.0858**	-.0724**	-.0398	-.0440†	-.0457†	-.0662**
JAP	.0540**	.0263*	.0258*	.0356**	.0191	.0142
JOB	.0584**	.0328†	.0215	.0177	.0202	.0297
R^2	.0313	.0627	.0946	.1092	.1224	.1793
Model Q	94.78**	196.75**	249.09**	317.19**	358.95**	550.54**
Residual Q	2930.51**	2943.60**	2283.70**	2588.25**	2572.84**	2520.30**
Total Q	3025.29**	3140.35**	2632.73**	2905.43**	2931.79**	3070.84**

[b] † sig. 0.1; * sig. 05; ** sig. 0.01 (all based on two-tailed tests).