# THE INFLUENCE OF CULTURAL VALUES ON CREATIVITY: COMPARING THE UNITED STATES AND SOUTH AFRICA

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## ABSTRACT

Research on the influence of culture on creativity is in its infancy. Organizations world-wide may benefit from such research by implementing work environments that maximize creativity. In this article, we investigate cross-cultural differences in creativity and the cultural values of cognitive uncertainty and desire for change. 383 undergraduates from the University of North Florida (198) and the University of Pretoria in South Africa (185) participated in a study that measured creativity using the Abbreviated Torrance Test for Adults (ATTA; Goff & Torrance, 2002) and the Creative Achievement Questionnaire (CAQ; Carson, Peterson, & Higgins, 2005). In addition to measuring creativity levels in both cultures, the researchers investigated cultural values. Results show significant correlations between Cognitive Uncertainty, Desire for Change, and creative achievement. Results are used for implications in setting creative environments within organizational cultures.

## INTRODUCTION

Worldwide, there are many organizations surviving or maintaining success due to the creative talents of their employees. Creativity is a factor that has generated much growth in organizational development, and organizations are aware of the successful benefits of creativity (Baer & Oldham, 2006). Companies such as Google, Apple, and Microsoft are examples of the organizational benefits ensuing from high creativity. With creativity being a premium factor in organizational success and organizations world-wide becoming more and more competitive, it is necessary to learn about cultural similarities and differences in creativity. The authors in the present study investigated the relationship between cultural values (Cognitive Uncertainty, Desire for Change) and creativity in the United States and South Africa. Cross-cultural differences were evaluated between the countries.

## Creativity across Cultures

Between cultures, there are several ways to define creativity; however, the value of creativity is consistently appreciated across cultures. One definition of creativity is a production of novel, useful ideas or problem solutions (Amabile, 2005). The use of creative ideas can and has been beneficial in most aspects of human development. Creative ideas have helped to shape our world with innovative products such as the telephone, airplane, and automobile. In present day, many of these products are technologically based, such as the apple iPad for web-based meetings as an idea to better communicate globally.

It is important to note that creative constructs differ amongst cultures. Hofstede (1984, p. 82) defined national culture as "the collective programming of the mind." According Hofstede's definition, national culture consists of many shared tendencies and aspects, which result in less variance when measured within countries than between countries. As cultures vary, the assessment and value of creativity varies (De Dreu, 2010). For example, Morris and Leung (2010) found that Western cultures compared to Eastern cultures, place a higher value on originality and novelty of creative ideas rather than usefulness and appropriateness. Bechtoldt (2010) showed that Western cultures increased their creation of original ideas but not useful ideas when motivated to do their best on a task. Eastern cultures showed the opposite effect, as they were found to generate more useful ideas than original ideas. These results substantiate that creativity does vary between cultures. One culture may embrace an idea as creative because of its unique or original characteristics while another culture may not value that same idea as creative, but rather embrace an innovation's practical use to be of importance.

## Cultural Values

Cultural differences have been evident when measuring creativity (Zhou, & Su, 2010). Cognitive Uncertainty (CU) and Desire for Change (DC) are two cultural values that may influence cross-cultural differences in creativity. Cognitive Uncertainty can be described as the extent to which an individual prefers order, planning, structure in an uncertain environment, and less ambiguity. Desire for Change can be described as the extent to which an individual prefers novelty and change (Greco, & Roger, 2001). Higher scores in CU depict an individual's preference for control and certainty and higher scores in DC depict an individual's preference for new and unknown conditions. Previous research shows that individuals prefer less ambiguity when given forced choice options between high ambiguity and low ambiguity choices (Curley et. al., 1986). According to Al-Kailani (2011), the avoidance of high ambiguity is due to the threat of an ambiguous situation being uncertain. Hofstede (1984) identified stability, predictability, risk avoidance, strict control systems, resistance to change, and discomfort with the unknown as characteristics of cultures with a preference for certainty. The opposite may be said for cultures whose norms are a preference of the uncertain. Such societies are characterized by risk-taking, tolerance to innovation and new ideas, openness to change, comfort with the unknown, and optimism about the future.

## Creativity and Cultural Values

The embracement or avoidance of uncertain situations can be related to creativity amongst different cultures. DiRienzo et al. (2007) suggest that cultures high in Cognitive Uncertainty are less reluctant to challenge authority, rules, order, and structure. Assessment of the research on Cognitive Uncertainty suggests that high Cognitive Uncertainty should decrease innovation, particularly a form such as radical innovation; as one can infer that the creation of a radical idea brings upon uncertainty. Radical creativity is characterized by high risk (Taylor & Greve, 2006), and this type of innovation can result in greater payoffs (Gilson & Madjar, 2010).

One goal of this study was to explore whether differences in Cognitive Uncertainty and Desire for Change between cultures are related to higher levels of creativity. In the study, the relationship between Cognitive Uncertainty, Desire for Change, and creativity is explored in South Africa, the United States, and overall in both countries. Is it possible that the most creative individuals pursue change and uncertainty more than less creative individuals? Implications of this research may be beneficial to organizations globally. Organizations can implement the preferred organizational style (e.g., an organizational environment low in uncertainty) to maximize creative success.

## The Two Cultures of Comparison

The two countries examined in this study were the United States and South Africa. Data collection took place in English as both countries have English as a national language. South Africa, a traditional country, has experienced many changes over the last 20 years. A complete shift in government after the election of President Nelson Mandela in 1994, South Africa has faced many challenges in their post-Apartheid period. Challenges such as increased spread of HIV, increased criminal violence rather than government violence, and emigration of 250,000 white South Africans has left many citizens uncertain about their futures as they cope with a conflicted pessimism and optimism about the future of their country (Colvin, 2003). As today's South African strives in the present to find identity and space in the future, it is important for South African businesses to embrace the creativity of their employees in a country continuing its journey to rebuild, reshape, and redeem its past. As there is little creativity research in South Africa, this study will help identify how cultural values influence creativity in a country enduring profound changes.

The United States, a modern country with a creative culture, continues to influence the global economy. The United States embraces a culture of self-expression, uniqueness, and originality and has been found to report high comfort with uncertainty (Parnell, Lester, Long, & & Köseoglu, 2012). Research by Zhou and Su (2010) has shown U.S. participants scoring higher than Chinese participants in the creativity domains of fluency, flexibility, and originality. The researchers of the current study focused on comparing a modern creative culture (United States)

against a traditional culture (South Africa), with the potential for high creative output as South Africans transition through dynamic changes. Furthermore, South Africa, a country regarded as the most developed nation in Africa, is often underrepresented in cross-cultural research. The results of this study will help generalize creativity research to the South Africa region.

## HYPOTHESES

**H-1**: in order to assess construct validity, it was expected that cognitive test scores of creativity measured by the ATTA will correlate positively with test scores of creative achievement in real life measured by the CAQ, in both the United States and South Africa (Hypothesis 1).

**H-2**: the research on Cognitive Uncertainty led the researchers to expect lower CU scores to correlate with higher creativity scores. The second hypothesis predicts a negative correlation between CU scores and creativity scores on the ATTA and the CAQ (Hypothesis 2).

**H-3**: it was anticipated that individuals with a higher Desire for Change will report higher creativity scores. The third hypothesis predicts a positive correlation between DC scores and creativity scores on the ATTA and the CAQ (Hypothesis 3).

The final set of hypotheses refers to possible country differences. Finally, previous research shows the United States reported greater comfort with uncertainty and scored higher in the creativity domains: fluency, flexibility, and originality. In order to compare the two countries, the researcher split the fourth hypothesis into subparts. Hypothesis 4a predicts mean ATTA scores to be significantly higher in the United States than in South Africa. Hypothesis 4b predicts mean CAQ scores to be significantly higher in the United States than in South Africa. Hypothesis 4c predicts mean CU scores to be significantly higher in South Africa than in the United States. Last, hypothesis 4d predicts mean DC scores to be significantly higher in South Africa than in the United States, as South Africa has experienced dynamic changes over the past two decades with transitions in their political and social systems (Colvin, 2003).

## METHODOLOGY

### Participants

The participants were 198 undergraduate students at the University of North Florida, United States and 185 undergraduate students at the University of Pretoria, South Africa. Participant ages ranged from 18 to 55 years old ($M$ = 22; $SD$ = 4.98). Of the 383 participants, 288 were

female and 95 were males. A large majority of the participants (244) majored in the social sciences.

**Instruments**

- Abbreviated Torrance Test for Adults (ATTA): The ATTA is a shortened version of the Torrance Tests of Creative Thinking (TTCT; Torrance and Horng, 1980). The ATTA measures creativity by quantifying verbal and figural responses. The ATTA is made up of three activities. Activity 1 instructs participants to list as many problems that might occur if the participant could walk on air or fly without being in an airplane or similar vehicle. Sample responses include "loss of jobs in the airplane industry" and "I would get bugs in my teeth." Activities 2 and 3 instruct participants use incomplete figures and triangles to create pictures. Scores from these responses and pictures are summed up with fifteen criterion-referenced creativity indicators that total together to equal a creativity index score. The main aspect of the overall creativity score is originality, fluency, elaboration, and flexibility. The higher the creativity index scores the higher the level of creativity.

- Creativity Achievement Questionnaire (CAQ): The CAQ is a self-report measure that assesses creative achievement across 10 domains (Carson et al., 2005). These domains include: visual arts, music, dance, architectural design, creative writing, humor, inventions, scientific discovery, theater and film, and culinary arts. Sample questions within the domains include, "I have no training or recognized talent in this area" (score = 0) and "my composition has been recorded" (score = 5). An overall creative achievement score was calculated by adding the sum of each of the 10 domains.

- Cognitive Uncertainty and Desire for Change are two independent constructs selected to measure cultural values on the individual level and not on the cultural level. The two constructs had low correlations in both the United States and South Africa overall and in each country respectively (see tables 1-3). The constructs were measured from a shortened version of Greco and Roger's (2001) Uncertainty Response Scale measuring Cognitive Uncertainty (CU) and Desire for Change (DC). Responses were recorded on a 1-4 Likert scale; 1 indicating "never", 2 indicating "sometimes", 3 indicating "often", and 4 indicating "always". A sample question from the CU scale includes "I like to know exactly what I'm going to do next." A sample question from the DC scale includes "New experiences excite me." The CU sub scale had a Chronbach's alpha = .88 (.88 for the U.S. sample and.86 for the South African sample) and the DC sub scale had a Chronbach's alpha = .87 (.90 for the U.S. sample and .82 for the South African sample).

- A demographics survey was administered as well including items such as age, gender, and undergraduate major to name a few.

## Procedure

Each participant received a packet consisting of the Abbreviated Torrance Test for Adults (ATTA; Goff & Torrance, 2002), Creative Achievement Questionnaire (CAQ; Carson et. al., 2005), a shortened version of the Uncertainty Response Scale measuring Cognitive Uncertainty and Desire for Change (URS; Grecko & Roger, 2001), and Demographics Questionnaire. The participants received instructions and time limits for each portion of the packet (ATTA, CAQ, and surveys). Data in the United States was collected in groups of 15 – 20 participants, with each session lasting approximately 45 minutes. Data collection in South Africa was collected in three total sessions; session 1 included 111 participants, session 2 included 33 participants, and session 3 included 41 participants. Data collection in each session also lasted approximately 45 minutes.

## Data Analyses

All of the participants' responses were recorded on the participants' packet in accordance to the directions. In some cases where directions were not followed, data were omitted and indicated as missing values (999999). Surveys and tests were administered in English in South Africa because English is an official South African language. Data in South Africa were coded by the first author and a South African student who was trained by the first author on the ATTA for 4 hours. Inter-rater reliability was established between the first author and the coder in South Africa with a Pearson correlation of $r$ (185) = .99, $p < .001$. Data in the United States were coded by the first author and another U.S. student. Inter-rater reliability was established between the two coders in the United States with a Pearson correlation of $r$ (198) = .79, $p < .001$. Upon establishing inter-rater reliability, means were calculated between the two raters' scores of the ATTA responses. To test the hypotheses, correlations were calculated among Creativity Index scores of the ATTA, the Creative Achievement Questionnaire, Cognitive Uncertainty, and Desire for Change. Finally, to test mean differences between the two countries, United States and South Africa, independent samples t-tests were calculated.

# RESULTS

## United States and South Africa

Table 1 shows the overall correlation matrix for the Abbreviated Torrance Test for Adults (ATTA), Creative Achievement Questionnaire (CAQ), Cognitive Uncertainty (CU), and Desire for Change (DC) in both the United States and South Africa. As the table shows, there is a significant positive correlation between the ATTA and the CAQ, $r$ (382) = .12, $p < .05$, supporting hypothesis 1.

Hypothesis 2 predicted that CU scores would negatively correlate with scores on the ATTA and the CAQ. This relationship was not found between CU scores and ATTA scores, however, there was a significant negative correlation between CU and the CAQ, $r$ (382) = -.12, $p < .05$.

The third hypothesis predicted that DC scores would correlate positively with scores on the ATTA and the CAQ. This relationship did not exist between DC scores and ATTA scores, however, scores on DC correlated positively with scores on the CAQ, $r$ (381) = .24, $p < .01$.

**TABLE 1: CORRELATIONS OF MEASURES IN THE UNITED STATES AND SOUTH AFRICA**

| Measure | ATTA | CAQ | CU |
|---|---|---|---|
| 1. ATTA | | | |
| 2. CAQ | .12* | | |
| 3. CU | -.01 | -.12* | |
| 4. DC | .05 | .24** | -.08 |

*$p < .05$. **$p < .01$

Figure 1 presents mean scores for the ATTA in both countries. Figure 2 presents mean scores for the CAQ in both countries. Figure 3 presents mean scores for Cognitive Uncertainty in both countries and Figure 4 presents mean scores for Desire for Change in both countries.

Independent samples t-tests were calculated to investigate possible mean differences between the two countries across ATTA, CAQ, Cognitive Uncertainty, and Desire for Change. To reduce Type I error, p-values were adjusted using Bonferroini adjustment, $p = .05 / 4 = .0125$. Results support hypothesis 4a with the U.S. population scoring higher than the South African population on the ATTA, $t$ (381) = 2.25, $p < .05$. Additionally, the United States scored significantly higher than South Africa on the ATTA's creativity sub-domains of fluency, $t$ (381) = 2.75, $p < .01$, originality, $t$ (381) = 3.88, $p < .01$, and elaboration, $t$ (381) = 1.39, $p < .01$. There was no significant difference between the two countries in the flexibility domain.

Hypothesis 4b was partially significant as the U.S. population reported slightly higher scores than South Africa on the CAQ, $t$ (380) = 1.69, $p = .09$. Specific differences on the CAQ subfields between the United States and South Africa include mean differences in the Dance subfield, $t$ (374) = 2.67, $p < .01$, and mean differences in the Inventions subfield, $t$ (377) = 2.01, $p < .05$, as U.S. participants scored higher than South African participants in both.

Hypothesis 4c was also supported as the South African population scored higher than the U.S. population in Cognitive Uncertainty, $t$ (381) = -2.73, $p < .01$. Finally, hypothesis 4d was rejected as both countires did not signficantly differ in their culutral value scores of Desire for Change.

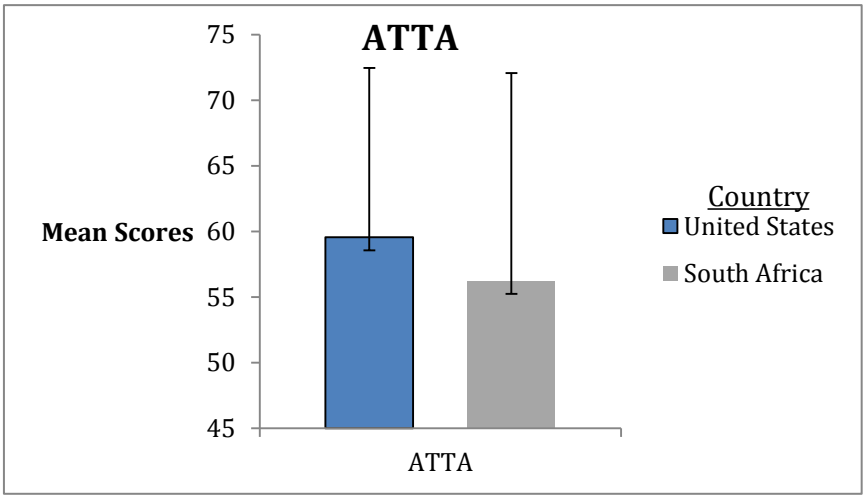


**FIGURE 1: MEAN SCORES OF ABBREIVIATED TORRANCE TEST FOR ADULTS**

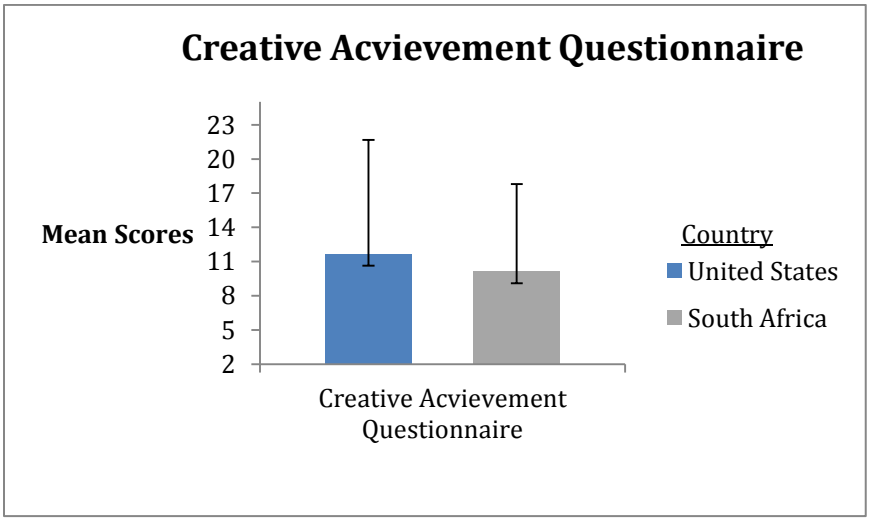


**FIGURE 2: MEAN SCORES OF CREATIVE ACHIEMVEMENT QUESTIONNAIRE**

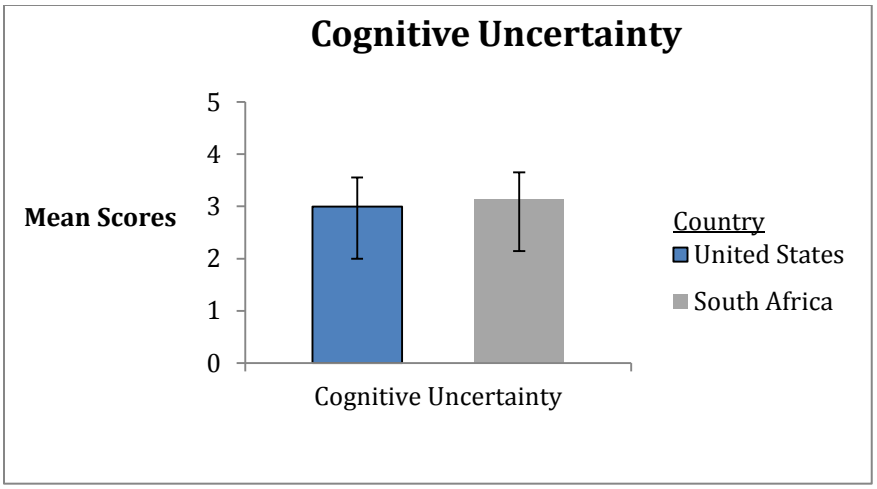


**FIGURE 3: MEAN SCORES OF COGNITIVE UNCERTAINTY**

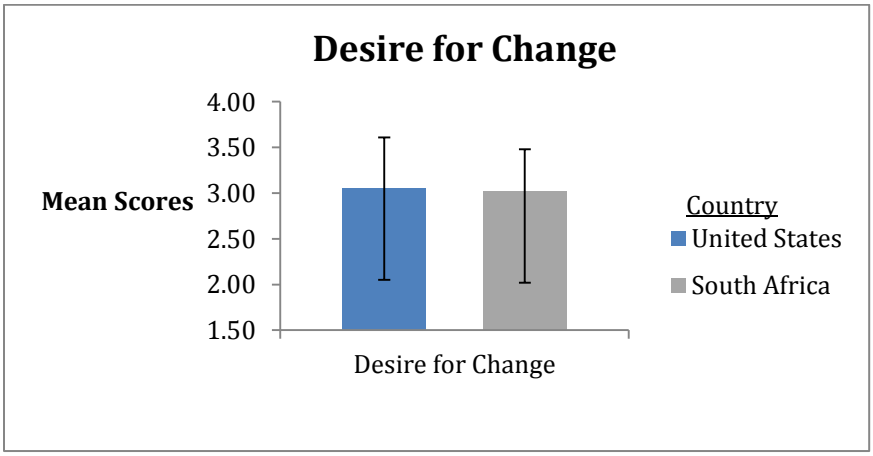


**FIGURE 4: MEAN SCORES OF DESIRE FOR CHANGE**

**United States**

Table 2 shows the correlation matrix for the Abbreviated Torrance Test for Adults (ATTA), Creative Achievement Questionnaire (CAQ), Cognitive Uncertainty (CU), and Desire for Change (DC) in the United States. As shown in the table, there is a partially significant correlation between the ATTA and CAQ, $r$ (198) = .13, $p$ = .07, partially supporting hypothesis #1. Also shown in the table, there is a significant relationship between DC and the CAQ, $r$ (198) = .32, $p < .001$, supporting hypothesis #3. Hypothesis #1 and hypothesis #2 were not supported, indicating a lack of construct validity among the U.S. population and a lack of correlation between CU and the CAQ or ATTA.

**TABLE 2: CORRELATIONS OF MEASURES IN THE UNITED STATES**

| Measure | ATTA | CAQ | CU |
|---|---|---|---|
| 1. ATTA | | | |
| 2. CAQ | .13 | | |
| 3. CU | .06 | -.09 | |
| 4. DC | .05 | .32** | -.12 |

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

**South Africa**

Table 3 shows the correlation matrix for the Abbreviated Torrance Test for Adults (ATTA), Creative Achievement Questionnaire (CAQ), Cognitive Uncertainty (CU), and Desire for Change (DC) in South Africa. As shown in the table, there is a significant correlation between the CU and the CAQ, $r$ (184) = -.15, $p$ < .05, supporting hypothesis #2. Hypotheses #1 and hypothesis #3 were not supported, indicating a lack of construct validity in the South African population and a lack of correlation between DC and the CAQ or ATTA.

**TABLE 3: CORRELATIONS OF MEASURES IN SOUTH AFRICA**

| Measure | ATTA | CAQ | CU |
|---|---|---|---|
| 1. ATTA | | | |
| 2. CAQ | .11 | | |
| 3. CU | -.05 | -.15* | |
| 4. DC | .05 | .11 | -.20* |

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

**DISCUSSION**

The purpose of this study was to explore the relationship between creativity and cultural values between two countries, the United States and South Africa. Negative correlations between Cognitive Uncertainty and both creativity measures (ATTA and CAQ) would validate the effects

of ambiguity and uncertainty on creativity. Positive correlations between Desire for Change and both creativity measures would validate the effects of "new experiences" on creativity. Additionally, mean differences in scores between the two countries would provide generalizations regarding cross-cultural differences.

First, ATTA scores and CAQ scores correlated significantly in both countries overall and partially in the U.S. population alone. Although it is fair to assume that high scores on the ATTA may predict high scores on the CAQ, this was not the case in South Africa. This could be because the ATTA appears more suitable for an American-Western culture than a South African culture. For example, Activity 1 asked the participant to list potential problems in a hypothetical situation. Many responses to Activity 1 from the South African population referred to being possessed by or having a spell cast on you by a witch doctor. Although these responses may be considered unique and original within the U.S. population, this should not be the case among the South African population as such a response is not regarded as original among South Africans. The test does not recognize cultural distinctions in its format. On the other hand, the CAQ appears to be more flexible in accommodating for cultural distinctions than the ATTA. Questions such as "I have composed a piece of music" and "My work has won an award or prize" appear to better in generalizing between cultures (Carson et al., 2005). Additionally, the ATTA did not correlate significantly with Cognitive Uncertainty or Desire for Change in neither the United States, South Africa, or both countries overall.

Second, Cognitive Uncertainty correlated negatively with the CAQ in South Africa and also in both samples overall. There was no correlation between CU and the CAQ in the U.S. sample. These results were not surprising as previous research shows that Americans reported high levels of comfort with uncertainty (Parnell et al., 2012). Also, the relationship between CU and the CAQ may be non-significant because the CAQ measures creative achievement throughout an individual's entire lifespan. It should be considered then, that responses on the CAQ may reflect creative accomplishments at different life stages where uncertainty may not have been influential to the person's creativity. For example, a young boy wins a dance contest at the age of 8 years when uncertainty might not play an influential role in the child's life. Such conditions may very well reflect a missing relationship between the CAQ and Cognitive Uncertainty in the U.S. population.

On the other hand, the CAQ did correlate significantly with Desire for Change in the U.S. sample and also in both samples overall, but not in the South African sample. It is possible that a relationship between the CAQ and Desire for Change did not appear in the South African sample because the culture has experienced a lot of socio-cultural changes in recent history. Although these changes have benefited many, there are citizens of the country who find it more difficult to transition to these changes (Reardon & Govender, 2011). Such difficulty may result in a lack in Desire for Change, and might explain the absence of a correlation with the Creative Achievement Questionnaire in South Africa.

Finally, Zhou and Su (2010) provided several examples of cross-cultural differences when measuring creativity. These authors found that American samples consistently scored higher than Chinese samples on fluency, flexibility, and originality across different age groups. These results were similar when comparing an American sample with a South African sample. ATTA scores differed significantly between the United States and South Africa and also within the ATTA sub domains of fluency, originality, and elaboration. There was a marginally significant difference in CAQ scores, and significant differences in Cognitive Uncertainty scores between the two countries. Country was not a significant factor for the Desire for Change cultural value. It is not surprising that U.S. students scored higher on the ATTA, as mentioned above, the test's format appears to favor the American-Western culture over the South African or international population. Significant differences in Cognitive Uncertainty, also, do not come as a surprise being that the political developments and the social demographic developments seem more in flux in South Africa.

Americans have typically reported greater comfort with uncertainty as the American culture has been found to have a higher tolerance for uncertainty (Rinne et. al, 2012). Finally, the lack of difference in Desire for Change mean scores was likely. As stated above, South Africa has experienced many socio-cultural changes in recent history, and there are citizens who have found the transition very difficult (Reardon & Govender, 2011). The United States has also experienced many changes in recent times with recession of the American economy and the many changes in government laws/policies (i.e., health care reform). Although each country may have different starting points, it appears that both populations are relatively equal in their Desire for Change.

**Research Limitations**

Limitations of the study could be related to the measurements. As mentioned above, the ATTA appears to be more suitable to the American-western culture than the South African culture. Several South African participants responded to Activity 1 of the ATTA with, "people will think that I am possessed," "people will think I dabble in witchcraft," "people might think someone has put a spell on me." Such answers are not listed as typical non-original responses in the ATTA scoring manual for Activity 1. Scoring such responses as original, when they are non-original within the South African culture may alter the accurate measuring of creativity. South Africans also scored significantly lower than Americans in the originality sub domain of the ATTA. As previous research has found, western cultures place a greater value on originality and uniqueness rather than usefulness and appropriateness (Morris & Leung, 2010). The measuring of original outputs on the ATTA may then be more suitable for U.S. participants over South African participants. The value of creativity varies as cultures vary

## Implications

This research can be used to the benefit of businesses, organizations, educational settings, and to anyone or group looking to optimize creativity. Data were presented in both the United States and South Africa relating creativity to cultural values. Businesses, for example, may use these research findings by identifying and mimicking a workplace environment that corresponds to the highest creative output (e.g. low in uncertainty and or high in desirability for change). If the business is located in the United States, upper management and executives may design a workplace environments based on a culture that embraces change, novelty, the unknown, and other characteristics depicting a high Desire for Change. If the business is located in South Africa, upper management and executives may design a workplace environment based on less structure, order, planning, and other characteristics depicting low Cognitive Uncertainty. The same can be said for organizations, educational settings, and groups of people looking to maximize creative efforts in the respective countries.

## Future Research

Future research examining the relationship between cultural values and creativity would benefit the cross-cultural literature. As businesses and individuals continue to interact on a global scale, it is important to identify what factors play a key role in their creative production.

From this study, it can be inferred that, at least, some relationships exist between creativity and Cognitive Uncertainty and Desire for Change. Future studies should be designed to examine more cultural values such as Collectivism versus Individualism, and Power Distance, in assessing the cross-cultural relationships of these constructs and creativity (Hofstede, 1983) or social axioms and their relationship with creativity (Leung & Bond, 2004). Furthermore, investigating the relationships between cultural values and certain types of creativity, such as evolutionary and revolutionary creativity, is recommended as part of a future research agenda (Gilson, D'Innocenzo, & Moye, 2012). Continued research on these subjects may profoundly increase creativity from culture to culture.

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