



In the World or in the Head: External and Internal Implicit Theories of Creativity

Susannah B. F. Paletz , Kaiping Peng & Siyu Li

To cite this article: Susannah B. F. Paletz , Kaiping Peng & Siyu Li (2011) In the World or in the Head: External and Internal Implicit Theories of Creativity, CREATIVITY RESEARCH JOURNAL, 23:2, 83-98, DOI: [10.1080/10400419.2011.571181](https://doi.org/10.1080/10400419.2011.571181)

To link to this article: <https://doi.org/10.1080/10400419.2011.571181>



Published online: 09 May 2011.



Submit your article to this journal [↗](#)



Article views: 719



View related articles [↗](#)



Citing articles: 20 View citing articles [↗](#)

In the World or in the Head: External and Internal Implicit Theories of Creativity

Susannah B. F. Paletz

Learning Research and Development Center, University of Pittsburgh

Kaiping Peng

Psychology Department, University of California, Berkeley

Siyu Li

Statistics Department, University of Pittsburgh

This research is an initial step to bringing existing research on cultural differences in attribution and holism to the study of implicit theories of creativity. Two studies examined the tendency to consider creativity to be prototypically expressed internally via reflection and internal states versus expressed externally via interaction and products. Study 1 had Caucasian American, Asian American, and Japanese undergraduates list activities and traits they associated with creative groups and individuals. In Study 2, Japanese, Chinese, Caucasian Americans, and Asian Americans chose specific professions as more creative using a paired forced-choice method. In both studies, East Asians had a greater propensity to choose external traits, activities, and professions as creative, whereas Caucasian Americans and to a lesser degree, Asian Americans showed a preference for internal items. The implications of cross-cultural differences in implicit theories of creativity are discussed.

Although creative works are produced and recognized throughout the world, they are formed within a given cultural context. For example, Nobel prizes are awarded for physics, chemistry, literature, physiology/medicine, and economics, but not philosophy, geology, psychology, or evolutionary biology (Zuckerman, 1996), suggesting that within the cultural context of Western science, certain domains are more or less valued.

Implicit theories of creativity—what people assume about creativity—may have consequences for what types of activities and traits are viewed as most prototypically indicative of creativity, biasing awards and resource expenditures. The cultural context includes not only how creativity is valued, but how it is conceptualized. Through determining the differences and similarities in how creativity itself is viewed across different

This research was supported in part by a Phi Beta Kappa dissertation fellowship, Sigma Xi grant-in-aid, and an NSF Monbusho Fellowship to the first author and Hellman Faculty Research funds to the second author. The authors wish to thank Susumu Yamaguchi, Fumio Murakami, Satoshi Akutsu, Serena Chen, and Daccher Keltner; Sumi Morikawa, Anne Hastings, Wang Lei and Shi Zhunqi (Jason Shi) were invaluable, as were Pei-Yuan Lin, Akihiro Domae, Yukari Ariizumi, Yuka Ebihara, Chiharu Yoneyama, Terumi Tokita, Naomi Misawa, Ruby Gomez, Jessica Hsieh, Michele Lee, Shirley Ly, Sarah Herrmann-Jónsson, Younga Park, Yang Tong, Makiko Omitsu, Kikumi Odaira, Alison Hau, Tania Garbe, Elly O'Rourke, and Katharine Clark. Katsiaryna Mazurenka and Allan Sampson gave statistical assistance. Kyle Jennings, Helen Boucher, Christian Schunn, Robert MacCoun, Christina Maslach, and the combined Nokes/Schunn lab gave helpful comments. Some of the results were presented at the American Psychological Association's Annual Conference in Chicago, Illinois, in 2002, the International Association of Cross-Cultural Psychology's conference in Xi'an, China, in 2004, and the International Congress of Applied Psychology in Athens, Greece, in 2006. These studies were conducted in partial fulfillment for the first author's Ph.D. dissertation at the University of California, Berkeley, under the general direction of the second author.

Correspondence should be sent to Susannah B. F. Paletz, LRDC 816, 3939 O'Hara Street, Pittsburgh, PA 15260. E-mail: sbfpaletz@gmail.com

cultures, we can better understand the nature of creativity.

The goal of the studies reported here was an initial application of the methods and theory of cross-cultural psychology to a little-studied aspect of implicit theories of creativity: The tendency to consider creativity to be prototypically expressed internally, via inner and personal processes, or externally, through products and interactions with others. A thorough review of anthropological, philosophical, and psychological literature suggested that Eastern conceptions of creativity are focused on inner processes and fulfillment, yet Western conceptions of creativity are focused on products (Lubart, 1999). However, based on the cross-cultural psychological literature, we hypothesized that internal, dispositional orientations would be of greater focus in American samples, and external, situational elements would be relatively more emphasized in East Asian samples. Given that this aspect of conceptions of creativity has rarely been empirically studied, these studies were also an exploratory attempt to determine whether the internal–external differences in implicit theories of creativity even exist. In the next section, we both define culture as a psychological construct and summarize the growing literature that runs counter to Lubart’s (1999) claim.

CROSS-CULTURAL THEORIES

Cross-cultural psychology provided the methods and conceptual framework for this study. Culture is often described as a shared system of learned meanings (Rohner, 1984), encompassing the “values, norms, beliefs, and assumptions embraced by participants” (Nystrom, 1990, p. 147). A recent approach to cross-cultural psychology involves implicit, lay, or folk theories. Implicit theories are the ideas and unspoken assumptions held by laypeople, whereas explicit theories are the ideas that scientists and experts have about the topic at hand, often through psychometric study (e.g., Runco, Nemiro, & Walberg, 1998). This approach has revealed significant differences in cognition between individuals from East Asia and people of Western European cultural descent, mainly in the United States (Nisbett, 2003; Nisbett & Masuda, 2003; Nisbett, Peng, Choi & Norenzayan, 2001; Peng, Ames, & Knowles, 2001; Peng & Nisbett, 1999). Nisbett et al. (2001) classified some of the cognitive differences in those cultural regions as analytic versus holistic thought. The holistic cognitive style, held more on average by East Asians, entails (among other factors) a tendency toward field dependence and a greater inclination, when compared with Caucasian Americans, to attribute the causes of behavior to the situation rather than the actor. Analytic

cognitive styles, by contrast, represent processes that direct attention to the object more than the field (field independence) and a greater likelihood of making the fundamental attribution error in social inference processes.

There is mounting evidence supporting this theoretical framework (Triandis, 1989). Cross-cultural work on social inference and attribution found that East Asians tend to use more experience-based, external information to understand the causes of others’ actions, whereas Westerners, primarily Americans, use more essentialist, dispositional attributions to explain others’ actions (Choi & Nisbett, 1998; Choi, Nisbett, & Norenzayan, 1999; Miller, 1984; Morris & Peng, 1994; Peng & Knowles, 2003). Cultural differences in inductive versus deductive inferences rest on the general tendency to either focus on objects or focus on context (Nisbett & Masuda, 2003; Peng et al., 2001). This research is broadly in line with studies on individualism–collectivism, which also suggested that individuals from East Asia have a greater tendency to appreciate and focus on social context, compared to members of more individualistic cultures (e.g., Triandis, 1989). For example, Menon, Morris, Chiu, and Hong (1999) suggested that North Americans are more likely to consider individuals to have agency, whereas East Asians are more likely to ascribe agency to collectives. Furthermore, differences in attribution seem to be due to East Asians’ tendency to consider both personality and situation attributions, rather than a purely external bias (Choi, Dalal, Kim-Prieto, & Park, 2003). This body of research indicates a greater appreciation for context and the external among East Asians, particularly when contrasted with American biases toward internal, dispositional, individual attributions. We seek to bring this research to bear on examining possible cross-cultural differences and similarities on implicit theories of creativity. In the next section, we define creativity and describe how the internal–external distinction may play out in implicit theories of creativity.

WHAT IS CREATIVITY?

In Western psychology, creativity is defined most commonly as a quality attributed to a person or a process that frequently produces a novel, appropriate, nonalgorithmic solution to a problem (Mayer, 1999; although some researchers demonstrate algorithmic creativity, e.g., Goldenberg, Mazursky, & Solomon, 1999). There is a consensus in the definition of creativity by researchers such that it includes the features of usefulness (appropriateness) and originality/novelty (Amabile, 1996; Mayer, 1999).

Creativity is far more complex than this definition. One distinction that has had little empirical examination is that of internal and external expression or manifestation of creativity. We apply the internal/dispositional and external/experiential distinction made within cross-cultural psychology to implicit theories of creative activities or traits. Because this project is exploratory, our initial conception of these different expressions of creativity includes a range of traits and activities that prior theory would suggest are in line with these internal versus external themes. Given that culture involves making sense of the world, a person with a primarily individualistic, internal, and analytic focus might emphasize different aspects of creativity when compared to a person who sees the world through a more collectivistic, holistic, and (relatively) external lens. Therefore, we suggest that to a person with a primarily internal focus, creativity is more likely to be considered to encompass creative activities such as reflection, states of being and inner experience, intuition, thinking, and high levels of self-awareness. Internally expressed creative activities might include individual creative problem-solving, rumination, meditation, and design, so long as the focus on design is on the thinking process, rather than the implementation of the design. Internally expressed traits might focus on intelligence, intuitiveness, and inward-focused emotional states.

A person who is highly aware of situational constraints, on the other hand, might focus on more external dimensions in his or her conception of creativity. External expressions of creativity would be demonstrated through actions in the world: leadership, social influence, and visible products. External expressions of creative actions would then involve interacting with others or implementing the design of a creative product. Traits associated with externally expressed creativity could include productivity, influence, and sociability. Thus, the internal-external distinction overlaps both with an individual-collective dimension and other, related issues, such as the process-product dimension, the impractical-practical dimension, and the degree to which an activity is valued by society.

The internal-external dimension is not the only distinction that should be examined, nor need implicit theories of creativity only demonstrate differences across cultures. Recent research on the importance of novelty and appropriateness to implicit theories of creativity in the United States, Japan, and China demonstrated both a great deal of similarity across cultures and counter-intuitive differences: For example, novelty was equally important across all three samples for theories of creativity, but appropriateness was more important to the participants from the United States and Japan than to those from China for both evaluations of creativity

and desire of products (Paletz & Peng, 2008). Additional dimensions that could be studied include, but are not limited to, creativity as learned and a function of hard work versus an innate skill, creativity as inef-fable versus measurable, creativity as normal versus a trait of eminent, unique, and/or odd individuals, and the degree to which creativity is valued. Rather than creating an integrated theory of creativity, this study simply examined the internal-external dimension. The next section describes relevant past literature on East-West distinctions in implicit theories of creativity.

EAST-WEST CROSS-CULTURAL IMPLICIT THEORIES OF CREATIVITY

Counter to the recent research in cross-cultural psychology, a review of the early cross-cultural creativity literature suggested that the Western conception of creativity is more focused on products, whereas the Eastern conception of creativity “involves a state of personal fulfillment... or the expression of an inner essence or ultimate reality” (Lubart, 1999, p. 340). This review incorporated theoretical articles that drew from philosophical writings and poetry to suggest that Eastern creativity is more intuitive and experiential (e.g., Wonder & Blake, 1992). For example, “Creativity is related to meditation because it helps one to see the true nature of the self, an object, or an event” (p. 340, followed by citations, cf. Chu, 1970; Kuo, 1996; Mathur, 1982). However, whether modern Eastern and Western conceptions of creativity are different in this manner has not been adequately tested empirically. Lubart’s (1999) review also focused on Eastern philosophy, art, religion, and literature, all of which are more relatively internal domains, whereas the descriptions of Western conceptions of creativity focused on psychologists’ definitions and operationalizations, such as the Torrance Tests of Creative Thinking (Torrance, 1974). Lubart’s (1990, 1999) reviews, by necessity, compared anthropological data and ancient philosophy from Eastern countries with psychological data from Western countries. This comparison confounded culture with modernity, anthropology with psychology, and often did not examine the variability that exists within the East and within the West. The proposed Eastern conception was similar to that of the eighteenth- and nineteenth-century Western Romantics, who also distinguished creative action from creative experience (Stark, 1965), as did Csikszentmihalyi (1997). Additionally, this review compared Western *explicit* theories of creativity with Eastern *implicit* theories of creativity. Such a mismatch made this argument of cross-cultural differences less convincing.

In recent years, the implicit theory approach has been used to examine conceptions of creativity in different cultures empirically, particularly in East Asia (e.g., Chan & Chan, 1999; Paletz & Peng, 2008; Rudowicz & Yue, 2002; Runco & Johnson, 2002; Yue, 2003, 2004; Yue & Rudowicz, 2002). Although these studies made contributions to understanding general conceptions of creativity, they were not designed to address the internal versus external expression of creativity, nor did most directly compare East Asia and the United States. Most of these studies examined traits associated with creativity (e.g., Runco & Bahleda, 1986). Our study is unique in that it explicitly and empirically compares different implicit theories of creativity on the internal–external dimension between East Asian and North American samples.

Many of the recent studies in East Asia were based on Sternberg's (1985, 1988) initial implicit theory of creativity research within the United States. Sternberg's purpose was to understand the degree of overlap between conceptions of intelligent, creative, and wise people; he found that intelligence, creativity, and wisdom overlapped somewhat but were primarily distinctive. Sternberg conducted these studies within the United States with participants from a range of fields (art, physics, philosophy, business, and laypeople) and also found differences in the degree of overlap between different fields of study: though physics, art, and philosophy professors perceived creativity and intelligence to be strongly related, non-academics and business professors saw this correlation as weaker (Sternberg, 1988). Lim and Plucker (2001) replicated much of Sternberg's (1985) methodology with several samples of Korean laypeople. They concluded that compared to earlier American studies, Koreans have similar conceptions of creativity, although they may comparatively emphasize negative traits when generating and rating traits and downplay independence and perseverance when evaluating individuals.

Rudowicz and colleagues conducted similar trait studies in Hong Kong, Taiwan, and the People's Republic of China focusing on creativity (Rudowicz & Hui, 1997; Rudowicz & Yue, 2000, 2002). Using factor analysis, they distilled huge lists of traits. Three factors were found across all samples: *innovative abilities* (creative, imaginative, observant, inventive, etc.), *dynamism* (assertive, independent, self-confident, etc.), and *intellectual* (wise, flexible, good thinking; Rudowicz & Yue, 2000). The authors concluded that creativity is relatively undesirable for Chinese, although a different study suggested that this is not the case for all aspects of the creative personality for Hong Kong Chinese (Hui & Rudowicz, 1997).

One study did directly compare individuals from different cultures on implicit theories of creativity: Runco

and Johnson (2002) studied the degree to which 68 adjectives were creative or desirable in children as assessed by Indian and American parents and teachers. There were country differences such that the U.S. sample rated intellectual and attitudinal composite scores of items indicative of creativity higher than the Indian sample. Thus, the degree to which certain characteristics are seen as indicative of creativity may vary across cultures.

These trait studies provided tantalizing hints but did not test hypotheses about internal and external expressions of creativity. A set of studies conducted by Yue and colleagues went beyond examining prototypical adjectives to examine the whole person. Yue and Rudowicz (2002) asked participants from Hong Kong, Taiwan, and the People's Republic of China to list up to three people in modern China or Chinese history who were the most creative and write down their reasons for choosing those individuals. Politicians, including historical figures like emperors and social activists, were most likely to be mentioned, followed by scientists and inventors. Artists and businesspeople were not listed as often, although poets were mentioned with some frequency by the Taiwanese sample. Yue (2003) then examined the "meritorious evaluation bias" (p. 151) within China: Creativity is likely to be attributed particularly to individuals who make greater social contributions. Almost 1,000 undergraduates across China nominated the three most creative individuals they knew in China and rated them on both creativity and social contribution (Yue, 2004). Politicians and scientists/inventors were, again, the most commonly nominated. Although all those nominated were rated relatively highly on both creativity and social contribution, politicians and scientists were more likely to have higher social contribution scores than creativity scores, whereas writers and artists were more likely to have higher creativity than social contribution scores. Yue (2003, 2004) suggested that, for the Chinese, the collectivist goal of social contribution and utilitarianism leads to attributions of creativity. Thus, creativity and social contribution are different dimensions that seem to be positively associated for this sample. This finding did not tease apart the internal–external dimension from how much creativity is valued in general, but it indicated that creativity might be prototypically associated with accomplishment, an obviously external expression of creativity.

These studies begin to map out implicit theories of creativity in different cultures. The general assumption that creativity has to do with originality, imagination, and so on, seems to be common. These studies and others on differences in creativity on tests (e.g., Khaleefa, Erdos, & Ashria, 1996, 1997) pointed out that cultural differences in creativity may be related to other cultural values, such as conformity and independence.

However, the majority of these studies focused within nations. Within-culture studies have a great deal of merit, but direct comparisons are necessary to determine whether there are cultural differences with the United States (e.g., Runco & Johnson, 2002). In addition, individual traits indicative of private self-concepts, rather than collective self-concepts, are likely to be more salient in individualistic versus collectivistic cultures (Triandis, 1989), suggesting that implicit theories of creativity research should move beyond individual trait terms, as Yue (2003, 2004) has done. Additional methods may be particularly important to gain a broader understanding of implicit theories of creativity across cultures. Finally, there is sufficient theory and research on East–West cross-cultural differences to test whether the patterns discovered with regards to dispositions/figure foci versus context/ground foci also apply to perceptions of creativity. These studies examined perceptions of creative people, but focused specifically on the external versus internal dimension.

HYPOTHESES

This article pits the assertion that the Eastern conception of creativity tends to focus on personal fulfillment or expressing an inner essence against the growing cross-cultural evidence that East Asians are significantly more attuned to situational factors than Americans, who tend to focus on the actor. We hypothesized that, given the (on average) greater sensitivity of East Asians to the social context, their implicit theories of creativity will be more likely to emphasize external themes, such as social significance, leadership, useful works, the creation of things in the world, and other visible cues. In comparison, given the (relative) American bias toward individualism and dispositionalism, internal aspects of creativity will be considered more prototypical, such as individuals' mental capacities, reflection, states of being and internal experience, intuition, and thinking.

Two separate studies were conducted for this article. The first, including Asian Americans, Caucasian Americans, and Japanese, was a qualitative elicitation of what activities and traits of individuals and groups might be considered creative with a top-down sorting into internal and external dimensions. The second study of Asian and Caucasian Americans, Japanese, and Chinese used a forced-choice methodology to examine tendencies to choose certain professions predetermined as internal or external as creative. We expected Asian Americans (tested here as predominantly East Asian Americans) to emphasize the internal versus external categories somewhere between our Caucasian American and East Asian samples. Although prior research has found similarities for Asian and Caucasian Americans for implicit

theories of creativity with regards to novelty and appropriateness (Paletz & Peng, 2008), other research has found differences such that Asian Americans were more in line with East Asian nationals (e.g., self-verification: Spencer-Rodgers, Boucher, Peng, & Wang, 2009).

STUDY 1

The first study was a qualitative survey of American and Japanese students. Participants wrote down activities and traits they associated with creative individuals and groups.

Methods

Participants. The respondents were 79 college students. Twenty-four Caucasian¹ and 30 Asian American undergraduates completed the survey during an introductory psychology course for nonmajors at a large public university in California. The other 25 undergraduates filled it out in a marketing class at a national university in Tokyo. The majority (92%) of the Japanese sample reported Japanese nationality and ethnicity, with two (8%) of the Japanese sample being other East Asians. Three (12.6%) of the Caucasian American sample were originally born in Canada or Europe, whereas all of the Asian Americans were born and raised in the United States. Of the entire sample, 71% ($n = 56$) were male and 29% ($n = 23$) were female, with no significant differences in gender composition by sample. The average age of the overall sample was 20 years old, but the Japanese were significantly older than the other two samples, who were not significantly different: M Japanese = 21.2 years old, M Caucasian Americans = 19.5 years old, $t(47) = -6.35$, $p < .001$ (equal variances assumed based on non-significant Levene test); M Asian Americans = 19.4 years old; $t(47.2) = -5.46$, $p < .001$ (equal variances not assumed based on significant Levene test).

¹The term *Caucasian* is used rather than *European American* because, according to the commonly used employment categories and the Census (1995), Caucasians (Whites) include individuals of Middle Eastern and/or North African descent who are not technically European (e.g., Lebanese). Because the demographics question was open-ended, it was often not possible to distinguish between Caucasians of purely European descent and those from Middle Eastern or North African descent. Although some specified their ethnicity (e.g., Egyptian, Japanese), many did not (e.g., Caucasian, Asian), and some followed the Census heuristics even though no categories were listed in the questionnaire (e.g., Caucasian-Persian). That said, only two individuals in Study 1 specifically self-identified as Middle Eastern or North African (8% of all Caucasians). Similarly, Asian Americans reported their own ethnicity, and many (18%) simply reported *Asian* or *Asian American*, making it impossible to determine which were South Asian versus East Asian. Of the rest, the majority were East Asian (e.g., Chinese, 38%; Japanese, 23%; Korean, 8%) or Pacific Islanders (9%), with a minority being Indian (5%).

Measures. The survey took 10 min to complete. In addition to demographics questions, the survey had four open-ended questions, each asking for as many words or brief phrases the participant could recall for: creative acts or behaviors done by an individual and, in a separate question, a group of interacting people; and words or traits associated with a creative person and, in a separate question, a creative group of interacting people. In asking about both individuals and groups, this survey avoids potential cultural bias based on possible differences in individualism and collectivism (e.g., Triandis, 1989).

The survey was translated into Japanese and then independently back-translated into English by two undergraduates from Japan who were attending an American university. The two versions were then discussed, reconciled, and edited by a third Japanese undergraduate.

Coding. The entire list of participant-generated words and phrases in Japanese were translated by a Japanese psychology graduate student, studying in Japan, whose secondary schooling was in England. These translations and the English responses formed the basis of the bottom-up categories, resulting in over 640 unique activities and over 380 unique trait terms.

The initial coding scheme for activities was created by the first author with no consideration for the internal/external distinction, and was independently checked by two bilingual Japanese social psychology graduate students attending the University of Tokyo. After the first author reconciled their comments, the second author, who had not seen any of the previous versions, edited the coding scheme. This iterative method of creating and checking categories is standard (Weber, 1990). The final version had 317 different activities codes categorized under 15 main headings, which were further combined into 10 major categories: *graphic arts* (illustration, painting, graphic design, etc.), *performing arts* (singing, directing, acting, movie making), *writing* (poetry, literature, etc.), *designing* (inventing, architecture, etc.), *social interaction* (organizing people, engaging in a celebration, discussing, etc.), *thinking* (brainstorming, problem solving, etc.), *building/crafts* (without creating a new design, e.g., making things from a pattern, building bridges, cooking), *sports* (basketball, soccer, martial arts, etc.), *miscellaneous* (e.g., having a baby, having an attitude, and a sense of style), and *other* (including education, investigation, being creative, collecting things, doing something).

For the trait terms, the first author used the WordNet English lexical database (Cognitive Science Laboratory, 2002, version 1.6, copyright Princeton University) to cluster semantically similar trait terms from both the English and translated Japanese into 120 main trait categories. These were then checked for distinctiveness and

clarity by a psychology undergraduate. These codes were further clustered into 35 higher-level individual trait term categories and 29 higher-level group trait term categories.

The qualitative Japanese data were then translated anew by a Japanese undergraduate attending college in the United States, who was blind to the coding categories, and then checked by two additional, independent translators. In this manner, the translations that formed the coding categories were independent from those translations that were then coded.

The entire set of activities was coded into the 317 categories under 15 high-level categories by two independent psychology undergraduates who were uninvolved in the process until this stage. Their direct agreement was 85% at the 317 category level. Differences were reconciled by a third undergraduate coder with the help of the first author. In most cases, the differences were caused by a simple error on the part of one or the other original coder. Two independent coders categorized all the trait terms into the 120 trait categories, and their direct agreement was 91%. A third coder who had checked over the WordNet-derived categories helped adjudicate any differences.

Using a top-down, theory-based approach informed by the cross-cultural psychology literature, the first and second authors then sorted the highest-level activity and trait categories as external, internal, and both/neither. Internal activities included *designing*, *writing*, and *thinking*, whereas external activities included *social interaction*, *building/crafts*, and *sports*. The external activities were chosen based on needing to involve others (e.g., social interaction, sports) or involving visible products (e.g., building/crafts); the internal activities were chosen based on being primarily internal processes (thinking, designing) or the process behind the majority of the work behind them being primarily internal (writing). Designing was considered internal because it focused on categories that often did not involve the implementation/visible creation of that design (which would be building/crafts). The visual and performance arts were initially sorted as both and thus excluded from these analyses. Internal traits included mental abilities and processes (e.g., intelligent, perceptive, thoughtful, curious, intuitive, dreamy, open-minded), wisdom (e.g., self-aware, maturity), and being calm, as well as negative internal process-driven traits (e.g., crazy, depressed, moody). External traits included those that focus on interactions with others, such as achievement, and being cooperative, communicative, extraverted, entertaining, friendly, contributing, and powerful, as well as negative external interactive traits, such as noisy, argumentative, and stubborn. These traits were classified as such regardless of whether they were group or individual traits: For example, imaginative, thoughtful, and smart

were all raised as examples of internal creative group and individual traits, whereas cooperative and argumentative were written down as external creative traits for both individuals and groups.

In order to verify the theory-driven assignments of the activities and traits as internal versus external, an additional sample of six Caucasian Americans in the United States and three Japanese nationals in East Asia independently rated these high-level clusters of activities and traits as to how internal and external they were on 1 (*not at all*) to 7 (*extremely*) scales after being given brief definitions of internal and external dimensions. These data were analyzed using repeated measures ANOVAs with Caucasian versus Japanese as a between-participants variable. The internal activities were rated as more internal, partial $\eta^2 = .68$, $F(1, 7) = 14.58$, $p = .007$, (marginal $M = 6.11$, $SE = .24$ vs. $M = 4.17$, $SE = .54$), and less external, partial $\eta^2 = .71$, $F(1, 7) = 17.46$, $p = .004$ (marginal $M = 3.89$, $SE = .53$ vs. $M = 6.00$, $SE = .25$), than the set of external activities. Similarly, the internal traits were rated as more internal, partial $\eta^2 = .57$, $F(1, 7) = 9.21$, $p = .019$ (marginal $M = 5.69$, $SE = .34$ vs. $M = 4.36$, $SE = .51$), and less external, partial $\eta^2 = .77$, $F(1, 7) = 23.72$, $p = .002$ (marginal $M = 3.86$, $SE = .36$ vs. $M = 5.70$, $SE = .30$), than the external traits. There were no significant differences between the Japanese and Caucasians or interaction effects between culture and internal-external category.

Results

Using chi-square analyses, Japanese, Asian American, and Caucasian American responses were compared for internal and external categories for traits and activities. First, there were no significant differences in the overall

number of individual or group activities or traits between any of the three samples. Different counts for the numbers of internal and external activities and traits for creative individuals and interacting groups are displayed in Table 1, along with the overall number of activities and traits elicited.² Asian Americans and Caucasians did not have any significant differences on individual or group traits or activities. There were also no significant differences between any of the three groups in terms of traits for creative individuals. However, Japanese came up with significantly more external and fewer internal activities than Caucasians for both individuals and interacting groups, $\Phi = .18$, $\chi^2(1) = 5.85$, $p < .02$ and $\Phi = .25$, $\chi^2(1) = 8.13$, $p < .005$, respectively. They also came up with fewer internal and more external traits for creative groups, $\Phi = .40$, $\chi^2(1) = 15.50$, $p < .001$. Comparing the Asian American and Japanese samples, there were no significant differences on individual activities, but as with the Caucasian sample, the Asian Americans listed relatively more internal and fewer external group activities and group traits than the Japanese, $\Phi = .25$, $\chi^2(1) = 9.46$, $p < .005$ and $\Phi = .35$, $\chi^2(1) = 14.89$, $p < .001$, respectively.

Study 1 Discussion

In general, the Japanese sample, compared to the Caucasian Americans, was more likely to mention visible and interactive types of activities and traits (e.g., social interaction, sports, cooperation, extraversion), whereas the Caucasians were more likely to mention internal activities and traits (e.g., thinking, designing, intelligence, depression). For the group traits and activities, the Asian Americans responded as the Caucasians. These findings were generally in line with the previous literature on cultural differences on internal,

TABLE 1
Number of Traits or Activities by Culture and Type

		<i>Japanese</i>	<i>Asian Americans</i>	<i>Caucasian Americans</i>
Activities: Individual	Internal	53	62	61
	External	43	37	23
	Total	167	191	176
Activities: Group	Internal	13	28	23
	External	63	42	36
	Total	115	123	111
Traits: Individual	Internal	34	45	36
	External	34	45	36
	Total	140	138	122
Traits: Group	Internal	1	23	17
	External	46	52	35
	Total	98	96	84

Note. Total = total number of activities performed by an individual, etc., elicited by each group. This number includes activities or traits not included in this study.

²Although the focus of this article is on differences in clearly internal versus external traits and activities, it is worth noting that internal versus external activities and traits, although a sizable proportion of the results, were not the only results from this study. In terms of activities, 42% of the creative activities by an individual listed by the Japanese respondents, 52% of those listed by Caucasian Americans, and 48% of those listed by Asian Americans were coded by the authors as both or neither internal and external. Most of these were the visual or performing arts. Similarly, 33% of the Japanese, 47% of the Caucasian Americans, and 43% of the Asian Americans listed group activities not included in this study. In terms of individual traits, 51% of those listed by the Japanese and 42% of those listed by Americans didn't fall neatly into internal versus external categories, and for traits involving creative groups, 52% of the overall group traits listed by the Japanese and 38% of those listed by Americans were not included. Thus, this area is ripe for finding additional similarities and differences between cultures with regards to creative activities and traits. Nevertheless, given the proportion of activities and traits that did fall into these categories—from 48% to 78% of all words/phrases listed, depending on the question and the group—it is clear that these themes are still a meaningful selection.

dispositional, and individual foci versus external, situational, and collective foci. It is also worth reiterating that there were no cultural differences for overall numbers of individual or group traits or activities between the three samples, suggesting that these findings were not simply due to cultural differences in perceived entity between individuals and groups (e.g., Menon et al., 1999). There were no significant differences between the three samples for traits of creative individuals. This pilot study involved small samples of undergraduates and did not examine differences due to major, age, or gender. It was also limited to Japanese participants, rather than testing other types of East Asians. Furthermore, it did not explicitly elicit low creativity options. Study 2 attempts to overcome some of these limitations.

STUDY 2

Study 2 was a replication and extension of Study 1's findings regarding activities, here tested as different specific professions. This study had several unique contributions: the addition of a second East Asian sample in China, the explicit examination of major, a paired forced-choice method, and the control of gender and age. A questionnaire was administered to undergraduates in the People's Republic of China, two locations in Japan, and two locations in the United States. To prevent cultural bias due to Likert scales (Chen, Lee, & Stevenson, 1995; Johnson, Kulesa, Cho, & Shavitt, 2005; Kuroda & Suzuki, 1989), this study involved a paired forced-choice method. For example, the Japanese language encourages Japanese participants to use the middle of scales, whereas Arabic encourages the use of the extremes (Kuroda & Suzuki, 1989). In addition, Study 1 did not examine or control for field of study/major, which has been shown within the United States to have differences on the overlap between implicit theories of creativity, wisdom, and intelligence (Sternberg, 1988). Thus, this study explicitly tested and controlled for such differences. Furthermore, gender and age were also examined as possible confounds.

Methods

Participants. The entire sample consisted of 109 Chinese students, 174 Japanese students, and 162 American students (103 Caucasian Americans and 59 Asian Americans). Of the Chinese undergraduates, 60% were female and 40% were male. All were attending a nationally respected public university in Beijing and took the survey either in a summer social psychology course (62, or 57%) or via participation in the research participant pool (47, or 43%). The Chinese undergraduates

were all born in China and were ethnic Chinese. Their average age was 26 years old and ranged from 18 to 56 years old. Thirty-six percent (39) were in the natural sciences, 48% (52) were in the social/behavioral sciences, and the rest (18) were in the arts, humanities, other, had double majors that crossed across categories, or did not report their major.

Of the 174 Japanese students, 41% were female and 59% were male. The largest group (78, or 44%) was engineering students from a large public university in Osaka taking a material engineering course. An additional 50 social psychology students and 47 other students taking a psychology course at two different nationally respected universities in Tokyo also participated in the survey. The mean age of these students was 21 years old, ranging from 18 to 26 years old. The majority were ethnic Japanese (93% and 5% did not report) and had been born in Japan and considered it their home (98% each). Most were natural science and mathematics majors (67%), with the remainder social science students (27%) or other, humanities/arts, or didn't report (6%).

The 162 American students lived most of their lives in the United States and considered it their home country. Eighty-nine percent were born in the United States. Thirty-five percent were male and 65% were female. Sixty-two percent (101) were taking psychology courses from a large public university in California and 38% (61) were recruited from an introductory sociology course in a large public university in North Carolina. Fifty-one percent were social/behavioral science majors, 26% were natural science/mathematics majors, and 23% were other—either humanities/arts majors, didn't report, or had a double major that crossed categories. Their average age was 20 years old and ranged from 18 to 54 years old. In terms of race/ethnicity, 64% (103) were Caucasian and 36% (59) were Asian American.

Measures. Internal versus external expressions of creativity were measured by assessing the relative creativity of six different professions using a paired forced-choice design. Participants were asked, "All other things being equal, who is the most creative of each pair? Please mark *one* answer for each pair" and then given each pair (e.g., An inventor/A spiritual person; A scientist/An artist; etc.). The six professions resulted in 15 unique pairings.

The six professions were artist, team manager, philosopher, scientist, inventor, and a deeply spiritual person. These professions were chosen by the first two authors to be general enough to be valid across different countries, have a mix of internally and externally expressed creativity, and include both prototypically high and low creativity. Two were generated by Study 1 (artist,

inventor), and one was mentioned in East Asian implicit theories of creativity studies (scientist; Yue, 2003, 2004; Yue & Rudowicz, 2002;). Team manager was chosen as an example of a profession that requires social/interacting activities. Spiritual person and philosopher have been specifically theorized as particularly more likely to be found creative in the East (Lubart, 1999). To check the internal versus external theory-based assignments of these professions, a separate sample of 13 English-speaking undergraduates, graduate students, and post-graduates primarily in psychology filled out a brief questionnaire. This sample included six Caucasian Americans, three Japanese nationals, and four Chinese nationals; four were male and nine female. The six professions were rated on how internal and external they were on 1 (*not at all*) to 7 (*extremely*) scales after brief definitions of the dimensions were given.

Finally, the survey packet for the main study participants included open-ended demographics questions. The race/ethnicity responses were coded into high-level Census 2000 categories (U.S. Census Bureau, 2008), Caucasian and Asian American.³ Major was coded into three categories: natural sciences and/or mathematics (e.g., biology, engineering, physics, mathematics, pre-medicine, etc.), social/behavioral sciences (e.g., psychology, history, education, business, etc.), and a third group made up of *other* (e.g., arts/humanities such as visual arts, languages, and English, interdisciplinary or double majors whose fields went across the natural science/social science or natural science/humanities or social science/humanities boundary, and missing). This was so that the main contrasts could be between the two groups that had the most representation (natural and social sciences).

Translation and equivalence. The entire packet was translated into Japanese and traditional Chinese by bilingual psychology undergraduate assistants who had lived most of their lives in Japan and Taiwan, respectively. These versions were then back-translated by individuals who had lived at least half their lives in Japan and the People's Republic of China, respectively, but had lived at least 10 years in the United States. The different versions were discussed, committee-style, by the four translators and the first author to be sure that same

³Within the American sample, 85% of those coded as Caucasian did not specify their ethnicity or origin beyond White or Caucasian, making it impossible to genuinely separate Europeans, Middle Easterners, and people of mixed Caucasian ethnicity. Only one individual specifically self-identified as Middle Eastern. The Asian Americans were more likely to list specific ethnicities than the Caucasians. Fifty-one percent (30) specifically reported Chinese American ethnicity, only 5% (3) specifying Indian or South Asian heritage, and the rest (44%) were some other kind of East Asian, Pacific Islander, or unspecified Asian ethnicity.

meaning, not simply exact word-for-word translation, was achieved across all versions. In this manner, changes or problems arising from one version could be addressed in the other two (van de Vijver & Leung, 1997). Finally, additional Japanese and Chinese bilinguals checked and edited the Japanese and Chinese versions for grammar and understandability.

Procedure. The majority of the students were recruited in undergraduate classes. The entire packet (not all results presented here, some reported in Paletz & Peng, 2008) took 45 min to an hour to complete. All participants were given informed consent forms in their own language and were debriefed after having taken the survey.

Results

Confirmation of categories. The small pretesting sample described ($N = 13$) assessed the different professions as internal and external. Using repeated measures ANOVAs and including Asian versus American nationality as a between-subjects variable, the three internal professions (artist, philosopher, and spiritual person) were judged as more internal, partial $\eta^2 = .70$, $F(1, 11) = 26.15$, $p < .001$ (marginal $M = 5.81$, $SE = .28$ vs. $M = 4.46$, $SE = .26$), and less external than the three external professions (scientist, inventor, and team manager), partial $\eta^2 = .46$, $F(1, 11) = 9.45$, $p = .011$ (marginal $M = 3.89$, $SE = .32$ vs. $M = 5.11$, $SE = .38$).⁴ There were no significant differences between the Asian nationals and Americans, nor any significant interaction effects between the two sets of professions and culture.

Overall model. The outcome variables were considered internal professions if artist, philosopher, or

⁴Because of our doubts regarding Likert scales, the pre-testing was also conducted using six repeated forced choice questions. Each profession was listed and the pilot testing participant chose whether it was considered primarily internal or external. The sample size was not big enough to conduct the GLIMMIX repeated measures logistic regression analyses done for the full study. However, we created an aggregate composite score for each *a priori* internal (artist, philosopher, spiritual person) and external (team manager, scientist, inventor) set. Each item was counted as +1 for internal and -1 for external so that the composites had possible scores from -3 (all external) to +3 (all internal) scores. We then conducted a within (repeated-measures) and between MANOVA with internal versus external and culture (Caucasian vs. Asian nationals) as independent variables. Although this analysis violates some of the assumptions of MANOVA, it had the same pattern of results as the Likert scale pretest analysis: There were no Asian versus Caucasian significant differences, nor any significant interaction effects of Asian/Caucasian by internal-external distinction, but the internal professions were chosen more often as internal ($M = 2.55$) than the external professions ($M = 0.63$), $F(1, 11) = 18.33$, $p = .001$, partial $\eta^2 = .625$.

spiritual person were chosen, and as external professions if scientist, inventor, or team manager were chosen. Given the nature of the repeated, paired forced-choice questions, the outcomes were not independent. Also, we were contrasting two different underlying dimensions, rather than each profession with each other, so only the nine internal versus external pairs were examined. The other six pairs, comparing internal to internal or external to external professions, were not included in these analyses. The data were treated as nine repeated measures for each participant. We employed a nested (nonindependent) logistic model using a generalized linear mixed model (GLIMMIX) in SAS. The number of preferred internal versus external professions was assumed to follow a binomial distribution, and the outcome variable was choosing internal professions. The GLIMMIX model utilized logit as the link function and forced choices per participant as repeated measures using an intraclass covariance structure for the random effects.

Within the GLIMMIX model, for the independent variables, we tested age, gender, major (natural science/math, social sciences, and other), and culture. Culture had four levels: Asian Americans, Caucasian Americans, Chinese, and Japanese. Age and gender were included in the model because of the significant differences across the different countries, age, partial $\eta^2 = .228$, $F(2, 442) = 64.94$, $p < .001$, and gender, $\Phi = .22$, $\chi^2(2) = 21.05$, $p < .001$. The GLIMMIX model had culture, gender, major, and age as main effects and subject as a random effect. Interaction effects were also tested. Significant interaction effects were unpacked by the specific contrasts of interest (described in the following). Specific contrasts included comparisons between the three different major categories and between the four different culture categories.

The GLIMMIX model was tested on the sample of Japanese, Chinese, and Americans who completed the paired forced-choice section of the survey ($N = 445$). Culture had a main effect across the four levels, $F(3, 417) = 15.71$, $p < .0001$, as did major, $F(2, 411) = 10.81$, $p < .0001$. Neither gender nor age had main effects. There were two significant interaction effects: gender by culture, $F(3, 418) = 3.84$, $p < .01$, and gender by major, $F(2, 411) = 5.17$, $p = .006$ (see Table 2 for effect sizes). The fitted model, including all four main effects and two significant interaction effects, had a generalized chi-square divided by degrees of freedom of 0.97, which, being close to 1, suggests the model fit the data set very well (SAS Institute, 2006, p. 180). In order to understand the main effects, one must first unpack the interaction effects. A significant interaction effect may suggest differences in opposite directions between different groups. Unpacking significant interaction effects is vital to understand possible differences.

TABLE 2
Effect Sizes for Significant Main and Interaction Effects in the Overall Generalized Linear Mixed (GLIMMIX) Model^a

<i>Effect: Specific Contrasts</i>	<i>d</i>
Main effect for culture (Four levels) ^b	
Caucasians versus Chinese	.006
Caucasians versus Japanese	-.135
Caucasians versus Asian Americans	.199
Chinese versus Japanese	-.137
Asian Americans versus Chinese	-.188
Asian Americans versus Japanese	-.326
Main effect for major (Three levels)	
Natural science versus social science	-.116
Natural science versus other	-.318
Social science versus other	-.246
Interaction effect of culture by gender (Four by two)	
Caucasian versus Asian American men	.250
Caucasian versus Asian American women	.018
Caucasian versus Chinese men	.403
Caucasian versus Chinese women	.491
Caucasian versus Japanese men	.287
Caucasian versus Japanese women	.529
Chinese versus Japanese men	-.172
Chinese versus Japanese women	.010
Asian American versus Chinese men	.071
Asian American versus Chinese women	.410
Asian American versus Japanese men	-.059
Asian Americans versus Japanese women	.451
Interaction effect of major by gender (Three by two)	
Natural science versus social science men	-.180
Natural science versus social science women	-.031
Natural science versus other men	-.489
Natural science versus other women	-.115
Social science versus other men	-.368
Social science versus other women	-.101

^aFor main and interaction effects, GLIMMIX models do not offer omnibus effect sizes, only effect sizes for specific contrasts.

^bThe main effects in this model obscure the interaction effects with gender. The interaction effects give a more accurate picture due to more accurate standard deviations.

Culture by gender interaction unpacked. We tested a series of specific contrasts for culture by gender (see Table 3). To unpack significant interaction effects, we estimated the contrasts and confidence intervals with both relative odds ratios and odds ratios. First, we had to determine the relative odds ratios, which in this case are analogous to the next level down interaction effect from the gender (two) by culture (four) interaction that was significant. Relative odds ratios are a ratio of odds ratios (ORs). The first contrast compares the odds ratios of male to female responses for Americans versus male to female responses for Asian nationals. For these analyses, Americans included both Asian and Caucasian Americans and Asian nationals include both Chinese and Japanese. This contrast (row #1, Table 3) was significant, suggesting an interaction between gender and culture where culture was focused on Americans versus Asians. This interaction was then further unpacked to

TABLE 3
Relative Odds Ratios (OR) and OR Contrasts Unpacking the Culture by Gender Interaction

Relative OR and OR Contrast	<i>t</i>	<i>df</i> ^a	OR Estimate (Lower Estimate, Upper Estimate) ^b	<i>p</i> Value
1. Relative OR of male/female Americans (Caucasians and Asian Americans) over male/female Asian Nationals (Chinese and Japanese)	-2.42	419	0.66 (0.47, 0.92)	.02
2. OR of male Americans/male Asians	2.36	432	1.37 (1.05, 1.79)	.02
3. OR of female Americans/female Asians	6.43	399	2.09 (1.67, 2.62)	<.0001
4. Relative OR of male/female Chinese over male/female Japanese	-1.43	433	0.74 (0.48, 1.12)	.15
5. OR of male Chinese/male Japanese	-1.81	442	0.75 (0.54, 1.03)	.07
6. OR of female Chinese/female Japanese	0.10	420	1.01 (0.75, 1.37)	.92
7. Relative OR of male/female Caucasians over male/female Asian Americans	2.02	412	1.75 (1.02, 3.01)	.04
8. OR of male Caucasians/male Asian Americans	2.58	426	1.80 (1.15, 2.81)	.01
9. OR of female Caucasians/female Asian Americans	0.18	385	1.03 (0.76, 1.40)	.86
10. Relative OR of male/female Asian Americans over male/female Asian Nationals	-2.86	428	0.50 (0.31, 0.80)	.005
11. OR of male Asian Americans/male Asian Nationals	0.13	449	1.02 (0.70, 1.51)	.90
12. OR of female Asian Americans/female Asian Nationals	4.81	395	2.06 (1.53, 2.77)	<.0001
13. Relative OR of male/female Caucasians over male/female Asian Nationals (Chinese and Japanese)	-0.72	398	0.87 (0.59, 1.28)	.47
14. OR of male Caucasians/male Asian Nationals	3.98	401	1.84 (1.36, 2.49)	<.0001
15. OR of female Caucasians/female Asian Nationals	5.95	394	2.12 (1.65, 2.72)	<.0001

^aRounded to whole numbers.

^bEstimate is of the OR (not the log odds) such that a *t* value means that the odds are the same between contrasts; a number greater than *t* means that the numerator group is more likely to choose internal professions than the denominator group. The lower and upper bound numbers describe the 95% confidence interval of the estimate.

compare the odds ratios of Americans versus Asian nationals for males (row #2, Table 3). There was a significant difference such that, controlling for age and major, the odds of a male American preferring an internal profession were 37% greater than the odds of a male Asian national choosing an internal profession as creative. The odds ratio for Americans versus Asian nationals for females was also significant and in the same direction: The odds of female Americans choosing internal professions as more creative were roughly twice (109% more often) that of female Asian nationals, controlling for major and age. In this case, then, the significant relative odds ratio (row #1) between gender and culture was due to the stronger difference in the same direction for females versus males. This finding was as predicted: Overall, Americans were more likely to choose internal professions as creative and Asian nationals were more likely to choose external professions as creative.

Although there were overall effects for Americans versus Asian nationals, it is possible that there were further gender by culture interactions between the two American cultural groups or between the two Asian national cultural groups. Comparing the Japanese versus Chinese, there were no significant differences unpacked for gender (Table 3, rows 4–6). Thus, we can continue to combine them in the analyses below.

Comparing Asian Americans and Caucasian Americans, however, revealed a significant relative odds ratio such that there were no significant differences in the

odds of choosing professions between Asian American and Caucasian American females, but controlling for age and major, the odds of Caucasian males choosing internal professions was 80% greater than Asian American males (Table 3, rows 7–9).

Because of the difference between Asian American and Caucasian American males, it was important to test the comparison between Asian Americans and Asian nationals. As one might expect from the previous findings, there was a significant relative odds ratio due to there being no significant difference between the male Asian Americans and Asian nationals. However, controlling for age and major, the odds of female Asian Americans choosing internal professions were almost twice as likely (106% greater) than the female Asian nationals (see Table 3, data rows 10–12). The difference between the Caucasians and the Asian nationals was similar to the overall pattern of differences between Americans and Asian nationals: Controlling for age and major, the odds of male Caucasians choosing internal professions were 84% greater than male Asian nationals, and the odds of female Caucasians choosing internal professions were 112% more likely than female Asian nationals (Table 3, rows 13–15).

Field of study by gender interaction. In order to determine if there were differences by major, it was also necessary to tease apart the major by gender interaction effect. Summarizing the results detailed in Table 4, controlling for age and culture, there were no differences in

TABLE 4
Relative Odds Ratios (OR) and OR Contrasts Unpacking the Major by Gender Interaction

Relative OR and OR Contrast	<i>t</i>	<i>df</i> ^a	OR Estimate (Lower Estimate, Upper Estimate) ^b	<i>p</i> Value
1. Relative OR of male/female natural science majors over male/female social science majors	-1.18	413	0.81 (0.57, 1.15)	.24
2. OR of male natural science majors/male social science majors	-1.83	413	0.78 (0.59, 1.02)	.07
3. OR of female natural science majors/female social science majors	-0.31	412	0.96 (0.76, 1.22)	.75
4. Relative OR of male/female social science majors over male/female other majors	-2.49	410	0.53 (0.32, 0.88)	.01
5. OR of male social science majors/male other majors	-3.76	418	0.46 (0.30, 0.69)	.0002
6. OR of female social science majors/female other majors	-1.00	392	0.86 (0.64, 1.15)	.32
7. Relative OR of male/female natural science majors over male/female other majors	-3.22	411	0.43 (0.26, 0.72)	.0014
8. OR of male natural science majors/male other majors	-5.01	420	0.36 (0.24, 0.53)	<.0001
9. OR of female natural science majors/female other majors	-1.14	396	0.83 (0.60, 1.15)	.26

^aRounded to whole numbers.

^bEstimate is of the odds ratio (not the log odds) such that a *t* value means that the odds are the same between contrasts; a number greater than 1 means that the numerator group is more likely to choose internal professions than the denominator group. The lower and upper bound numbers describe the 95% confidence interval of the estimate.

the odds of natural science versus social science majors choosing internal versus external professions as creative. However, males in both the natural sciences and social sciences were more likely than males in other majors to choose external professions as creative: The odds of a male in the natural sciences choosing an internal profession as creative were 64% less likely than males in other majors, and males in the social sciences were 54% less likely to choose internal professions as creative than males in the other majors. Females did not choose internal versus external professions differently depending on their major.

Study 2 Discussion

In terms of culture, the hypothesis was supported: controlling for age and major, the odds of Americans, particularly Caucasians, choosing internal professions as creative was greater than that of Asian nationals. The main exception was for male Asian Americans, who, on average, had the same chance of choosing internal professions as male Asian nationals. Female Asian Americans, on the other hand, responded much as female Caucasians. In addition, there were no significant differences between the Japanese and Chinese. Counter to Lubart's (1999) theory but in line with cross-cultural theory, people from the two East Asian countries were more likely than Americans to endorse items that portrayed creativity as being expressed externally rather than internally. It is possible that East Asians find the external expression of creativity more prototypical due to a focus on social relationships and social impact (e.g., Yue, 2003).

In addition, this study provides a preliminary test on this topic for major. Interestingly, although there were differences for major—both natural science majors and

social science majors were more likely to choose external professions as creative compared with other majors—this finding was only for males, suggesting that male majors were biased toward their own majors. Male students in the humanities and arts and other majors were more likely to choose philosophers, artists, and spiritual people as creative, whereas male natural and social science majors were more likely to choose scientists, inventors, and team managers as creative. The female undergraduates did not show a similar bias. Because the category of *other* was, based on small numbers of these majors, a mix of humanities, arts, and cross-over interdisciplinary majors, future research should tease apart which majors in particular are driving this finding. In addition, there were no major by culture interaction effects.

GENERAL DISCUSSION

This research provided a preliminary, but unique, test of whether creativity is seen as primarily internally or externally expressed in East Asia and the United States. Although Lubart (1999) suggested that Asians would find the internal expression of creativity to be more prototypical, recent research on culture and cognition (e.g., Nisbett et al., 2001) and on choosing creative Chinese individuals (Yue, 2003, 2004) suggested the opposite. Study 2 also controlled for and tested for major, a factor previously found to have an impact on implicit theories of creativity (Sternberg, 1988), revealing that male natural science and social science majors were less likely to choose internally expressed professions as creative compared to other majors. Furthermore, Study 2 explored possible gender and age differences. Our culture findings were in line with cross-cultural theory. The focus on the external is

consistent with previous research that East Asians view themselves as more interdependent (e.g., Markus & Kitayama, 1991), are more sensitized to the importance of the external situation than Westerners, and so are more likely to make external attributions for behavior compared to Westerners (Choi et al., 1999). Certainly, Westerners can make external attributions and East Asians can make internal, dispositional attributions: These are just general tendencies.

Three specific findings suggest that these tendencies are influenced by modern cultural learning, rather than simply the transmission of ancient traditions: the inconsistent differences and similarities between Asian Americans and Caucasian Americans based on gender, the lack of differences between Japanese and Chinese, and the differences between the male participants due to major. This last suggests that some combination of educational training bias and gender socialization may influence perceptions of creativity along the external–internal dimension, whereas the first two suggest commonalities within the United States and between undergraduates within two quite different countries, China and Japan. In examining the relative importance of novelty and appropriateness, Paletz and Peng (2008) found differences between Japanese and Chinese and relatively few differences between Americans and Japanese. Whatever cultural values and institutions influence implicit theories of creativity, they act differently on the perception of the internal–external expression of creativity than on novelty and appropriateness.

As with any study, these findings may have limitations and alternative explanations. This research only uses college students as participants. Given the effect for field on other implicit theories of creativity (e.g., Runco & Bahleda, 1986), the absence of artists and non-students limits the external validity of this study. On the other hand, the use of college students allows for greater comparability in terms of age and often in terms of absolute if not relative socioeconomic status across the three different nations. It can be very difficult to find similarly comparable samples of artists or non-students.

Cross-cultural studies are particularly methodologically complex. Although care was taken in questionnaire development, it is possible that there were errors or that some words have different implications in different languages. In fact, the modern verb *to create* in Chinese, even though it was originally taken from a Japanese word that was taken directly from the English word, has an unambiguously external focus such as to invent, build, and produce (Niu, 2003); in modern English, the first two meanings of *to create* are “(1) to cause to come into being, as something unique that would not naturally evolve or that is not made by ordinary processes,

(2) to evolve from one’s own thought or imagination, as a work of art or an invention” (dictionary.com, n.d.). We do not contend that language drives all the effects of this study, but linguistic meaning and culture-based concepts are interrelated. The ancient meanings of words and their associated cultural history have additional and even contradictory nuances. For example, ancient Chinese views of creativity clearly included self-cultivation (Niu, 2003).

One alternative explanation is that what are considered to be creative activities and traits are simply those that are valued generally in the culture. In particular, Study 2 did not distinguish between the internal–external dimension and prestige, confounding professions with creativity. This criticism is given some credence by the finding for major, although it only occurred in males. Similarly, the differences found may be due to a different emphasis on practicality in education. The liberal arts model of college in the United States may not be shared by either Japanese or Chinese universities. However, even if these alternative hypotheses are the case, they imply (a) that the Japanese and Chinese universities value practicality and utilitarianism over self-cultivation, and (b) internally focused professions are relatively more valued in the United States, which is a relevant cultural and institutional difference.

Another limitation in this study is that the two dimensions were chosen *a priori*: The samples confirming the categorization of different activities, traits, and professions into internal versus external were quite small. Additional studies should further refine the constructs of internal versus external creativity. Different dimensions underlying the internal–external divide should be teased apart, such as practicality–impracticality, product–process, social impact versus self-cultivation, and so on. Also, dimensions beyond the internal–external one may be of interest: In Study 1, many traits and activities were elicited that did not fit neatly into those categories. We recommend that future researchers in this area come up with additional meaningful dimensions. Yue’s (2003, 2004) meritorious evaluation bias is an example of a coherent synthesis of findings about a range of professions.

The methods chosen are also a limitation: Study 1 suggests that individual traits were less sensitive to cultural differences on this internal–external dimension than were activities or group traits. As with any cross-cultural venture, future research should, therefore, be very careful about what methods are chosen. Another method might result in different findings.

Future Research

These two studies are simply the beginning. Most of the previous research on implicit theories of creativity

focuses on factors of individual traits (e.g., Rudowicz & Yue, 2000, 2002). Even if one disagrees with our interpretation of our studies' results, these findings suggest that researchers should supplement their trait studies of implicit theories of creativity with additional methods. For example, researchers could use scenario methods to understand better implicit theories of creativity (Peng, Nisbett, & Wong, 1997). Researchers could also look for cross-cultural similarities and differences in perceptions of creative groups. Conceptions of creative groups are likely to differ depending on individualism–collectivism (e.g., Menon et al., 1999), and we recommend examining cultural values as mediators (e.g., Spencer-Rodgers et al., 2009). It would also be interesting to see if findings from South Asia, North Africa, Central America, and non-college-educated Americans would fall in line with cross-cultural theory. Furthermore, gender had an interaction effect: By unpacking and delineating additional dimensions and drawing in the study of gender, a broader theory of implicit theories of creativity could be formed.

Finally, researchers could empirically examine the relationships between implicit theories and behavior. Does viewing creativity as internally versus externally expressed encourage individuals to choose some activities over others, or is it the other way around? Do implicit theories affect how much money a person would spend on a product? These research questions are important in determining the practical implications of implicit theory research.

Implications

Even though mean differences were found in this study, it does not follow that Americans disdain accomplishments and external evidence for creativity, nor that East Asians see all internally-focused activities as noncreative. Also, it is important to stress that this research focused on assumed conceptions of creativity, not creative outcomes. However, if both East Asians and Americans value creativity equally (and that, itself, was not tested in this study), how they choose to focus or enact it may have some slight differences. Thus, this research has implications for creativity testing, educational systems, the development of creative skills, and industry reward and value processes. Although creativity can be expressed in a range of domains (e.g., Davis, 1989), different cultures may have different emphases on what types of activities are considered most prototypically creative. Prior research in Arab countries suggests that students score higher on measures of verbal creativity than figural creativity, possibly because of cultural values that encourage verbal learning and discourage visual arts (Mar'i & Karayanni, 1983).

There have been some East–West differences in creativity test results as well; although conceptions of creativity are hardly the only reason why these differences may exist, it behooves us to consider seriously the external validity of American-made creativity tests (Niu & Sternberg, 2002; Rudowicz, 2003). In different countries' schools, different courses may be required, different skills considered fundamental, and different assumptions made about the purpose of university learning. International awards (e.g., the Nobel Prize, Zuckerman, 1996) clearly value some fields over others. Of course, other cultural and social factors will have an impact on reward, value, educational systems, and activity choice: During times of economic stress, anything and anyone that is not helping make money may be particularly devalued.

Conclusion

This cross-cultural research is unique in bringing together top-down theory from cross-cultural psychology, three multinational samples, a deliberate examination of gender and major, and implicit theories of creativity. In examining issues that are relevant in different cultures, we go beyond our own assumptions and biases about the nature of creativity and take seriously the multidimensionality and complexity of creativity, beginning what could be a long line of cross-cultural research. If these results become established through future replication, then we can begin to address deeper questions: How do cultural values and cultural conceptions interact? How does culturally influenced meaning affect creative cognitive processes and development? Cross-cultural research on implicit theories of creativity enables us to understand better the nature of creativity, as we learn what laypeople from different perspectives think and assume.

REFERENCES

- Amabile, T. M. (1996). *Creativity in context: Update to the social psychology of creativity*. Boulder, CO: Westview Press.
- Census. (1995). *Census codes as of August 25, 1995*. Federal Register, 60, 44673–44693.
- Chan, D. W., & Chan, L. (1999). Implicit theories of creativity: Teachers' perceptions of student characteristics in Hong Kong. *Creativity Research Journal*, 12, 185–195.
- Chen, C., Lee, S., & Stevenson, H. (1995). Response style and cross-cultural comparisons. *Psychological Science*, 6, 170–175.
- Choi, I., Dalal, R., Kim-Prieto, C., & Park, H. (2003). Culture and judgment of causal relevance. *Journal of Personality and Social Psychology*, 84, 46–59.
- Choi, I., & Nisbett, R. E. (1998). Situational salience and cultural differences in the correspondence bias and in the actor–observer bias. *Personality and Social Psychology Bulletin*, 24, 949–960.

- Choi, I., Nisbett, R. E., & Norenzayan, A. (1999). Causal attribution across cultures: Variation and universality. *Psychological Bulletin*, *125*, 47–63.
- Chu, Y.-K. (1970). Oriental views on creativity. In A. Angoff & B. Shaprio (Eds.), *Psi factors in creativity* (pp. 35–50). New York: Parapsychology Foundation.
- Cognitive Science Laboratory. (2002). *WordNet: A lexical database for the English language*. Princeton, NJ: Princeton University. Retrieved February 1, 2002 from <http://wordnet.princeton.edu/>
- Csikszentmihalyi, M. (1997). *Creativity: Flow and the psychology of discovery and invention*. New York: HarperCollins.
- Davis, G. A. (1989). Testing for creative potential. *Contemporary Educational Psychology*, *14*, 257–274.
- Dictionary.com. (n.d.). *create*. Retrieved December 22, 2008 from <http://dictionary.reference.com/browse/create>
- Goldenberg, J., Mazursky, D., & Solomon, S. (1999). Creative sparks. *Science*, *285*, 1495–1496.
- Hui, A., & Rudowicz, E. (1997). Creative personality versus Chinese personality: How distinctive are these two personality factors? *Psychologia*, *40*, 277–285.
- Johnson, T., Kulesa, P., Cho, Y. K., & Shavitt, S. (2005). The relation between culture and response styles: Evidence from 19 countries. *Journal of Cross-Cultural Psychology*, *36*, 264–277.
- Khaleefa, O. H., Erdos, G., & Ashria, I. H. (1996). Creativity, culture, and education. *High Ability Studies*, *7*, 157–167.
- Khaleefa, O. H., Erdos, G., & Ashria, I. H. (1997). Traditional education and creativity in an Afro-Arab Islamic culture: The case of Sudan. *Journal of Creative Behavior*, *31*, 201–211.
- Kuroda, Y., & Suzuki, T. (1989). Language and attitude: A study in Arabic, English, and Japanese on the role of language in cross-cultural thinking. In D. M. Topping, D. C. Crowell, & V. N. Kobayashi (Eds.), *Thinking across cultures: The third international conference on thinking* (pp. 147–161). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Kuo, Y.-Y. (1996). Taoist psychology of creativity. *Journal of Creative Behavior*, *30*, 197–212.
- Lim, W., & Plucker, J. A. (2001). Creativity through a lens of social responsibility: Implicit theories of creativity with Korean samples. *Journal of Creative Behavior*, *35*, 115–130.
- Lubart, T. I. (1990). Creativity and cross-cultural variation. *International Journal of Psychology*, *25*, 39–59.
- Lubart, T. I. (1999). Creativity across cultures. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 339–350). New York: Cambridge University Press.
- Mar'i, S. K., & Karayanni, M. (1983). Creativity in Arab culture: Two decades of research. *Journal of Creative Behavior*, *16*, 227–238.
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, *98*, 224–253.
- Mathur, S. G. (1982). Cross-cultural implications of creativity. *Indian Psychological Review*, *22*, 12–19.
- Mayer, R. E. (1999). Fifty years of creativity research. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 449–460). Cambridge, UK: Cambridge University Press.
- Menon, T., Morris, M. W., Chiu, C.-Y., & Hong, Y.-Y. (1999). Culture and construal of agency: Attribution to individual versus group dispositions. *Journal of Personality and Social Psychology*, *76*, 701–717.
- Miller, J. G. (1984). Culture and the development of everyday social explanation. *Journal of Personality and Social Psychology*, *46*, 961–978.
- Morris, M. W., & Peng, K. (1994). Culture and cause: American and Chinese attributions for social and physical events. *Journal of Personality and Social Psychology*, *67*, 949–971.
- Nisbett, R. E. (2003). *The geography of thought: How Asians and Westerners think differently...and why*. New York: Free Press.
- Nisbett, R. E., & Masuda, T. (2003). Culture and point of view. *Proceedings of the National Academy of Sciences*, *100*, 11163–11170.
- Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: Holistic versus analytic cognition. *Psychological Review*, *108*, 291–310.
- Niu, W. (2003). Ancient Chinese views of creativity. *Inquiry: Critical Thinking Across Disciplines*, *22*, 29–36.
- Niu, W., & Sternberg, R. (2002). Contemporary studies on the concept of creativity; The East and the West. *Journal of Creative Behavior*, *36*, 269–288.
- Nystrom, H. (1990). Organizational innovation. In M. A. West & J. L. Farr (Eds.), *Innovation and creativity at work: Psychological and organizational strategies* (pp. 143–161). New York: John Wiley & Sons.
- Paletz, S. B. F., & Peng, K. (2008). Implicit theories of creativity across cultures: Novelty and appropriateness in two product domains. *Journal of Cross-Cultural Psychology*, *39*, 286–302.
- Peng, K., Ames, D., & Knowles, E. (2001). Culture and human inference: Perspectives from three traditions. In D. Masumoto (Ed.), *Handbook of culture and psychology* (pp. 243–263). New York: Oxford University Press.
- Peng, K., & Knowles, E. (2003). Culture, ethnicity and the attribution of physical causality. *Personality and Social Psychology Bulletin*, *29*, 1272–1284.
- Peng, K., & Nisbett, R. E. (1999). Culture, dialectics, and reasoning about contradiction. *American Psychologist*, *54*, 741–754.
- Peng, K., Nisbett, R., & Wong, N. (1997). Validity problems comparing value across cultures and possible solutions. *Psychological Methods*, *2*, 329–344.
- Rohner, R. P. (1984). Toward a conception of culture for cross-cultural psychology. *Journal of Cross-Cultural Psychology*, *15*, 111–138.
- Rudowicz, E. (2003). Creativity and culture: A two way interaction. *Scandinavian Journal of Educational Research*, *47*, 273–290.
- Rudowicz, E., & Hui, A. (1997). The creative personality: Hong Kong perspective. *Journal of Social Behavior & Personality*, *12*, 139–157.
- Rudowicz, E., & Yue, X.-D. (2000). Concepts of creativity: Similarities and differences among mainland, Hong Kong, and Taiwanese Chinese. *Journal of Creative Behavior*, *34*, 175–192.
- Rudowicz, E., & Yue, X.-D. (2002). Compatibility of Chinese and creative personalities. *Creativity Research Journal*, *14*, 387–394.
- Runco, M. A., & Bahleda, M. D. (1986). Implicit theories of artistic, scientific, and everyday creativity. *Journal of Creative Behavior*, *20*, 93–98.
- Runco, M. A., & Johnson, D. J. (2002). Parents' and teachers' implicit theories of children's creativity: A cross-cultural perspective. *Creativity Research Journal*, *14*, 427–438.
- Runco, M. A., Nemiro, J., & Walberg, H. J. (1998). Personal explicit theories of creativity. *Journal of Creative Behavior*, *32*, 1–17.
- SAS Institute. (2006). *The GLIMMIX Procedure*. Cary, NC: SAS Institute. Retrieved April 13, 2009 from <http://support.sas.com/rnd/app/papers/glimmix.pdf>
- Spencer-Rodgers, J., Boucher, H. C., Peng, K., & Wang, L. (2009). Cultural differences in self-verification: The role of naïve dialecticism. *Journal of Experimental Social Psychology*, *45*, 860–866.
- Stark, S. (1965). An essay on romantic genius, Rorschach movement, and the definition of creativity. *Perceptual and Motor Skills*, *20*, 409–418.

- Sternberg, R. J. (1985). Implicit theories of intelligence, creativity, and wisdom. *Journal of Personality and Social Psychology*, *49*, 607–627.
- Sternberg, R. J. (1988). A three-facet model of creativity. In R. J. Sternberg (Ed.), *The nature of creativity: Contemporary psychological perspectives* (pp. 125–147). Cambridge, UK: Cambridge University Press.
- Torrance, E. P. (1974). *Torrance Tests of Creative Thinking: Norms-technical manual*. Lexington, MA: Ginn.
- Triandis, H. C. (1989). The self and social behavior in differing cultural contexts. *Psychological Review*, *96*, 506–520.
- U.S. Census Bureau. (2008). *Racial and ethnic classifications used in census 2000 and beyond*. Retrieved December 22, 2008 from <http://www.census.gov/population/www/socdemo/race/racefactcb.html>
- van de Vijver, F. J. R., & Leung, K. (1997). *Methods and data analysis for cross-cultural research*. Thousand Oaks, CA: Sage.
- Weber, R. P. (1990). *Basic content analysis* (2nd ed.). Newbury Park, CA: Sage.
- Wonder, J., & Blake, J. (1992). Creativity East and West: Intuition vs. logic? *Journal of Creative Behavior*, *26*, 172–185.
- Yue, X. D. (2003). Meritorious evaluation bias: How Chinese undergraduates perceive and evaluate Chinese and foreign creators. *Journal of Creative Behavior*, *37*, 151–178.
- Yue, X. D. (2004). Whoever is influential is creative: How Chinese undergraduates choose creative people in Chinese societies. *Psychological Reports*, *94*, 1235–1249.
- Yue, X. D., & Rudowicz, E. (2002). Perception of the most creative Chinese by undergraduates in Beijing, Guangzhou, Hong Kong, and Taipei. *Journal of Creative Behavior*, *36*, 88–104.
- Zuckerman, H. (1996). *Scientific elite: Nobel laureates in the United States*. New Brunswick, NJ: Transaction.