This study examines whether European Americans and Chinese differ in their creation and evaluation of drawings of geometric shapes. Two hundred ninety-four drawings created by 50 European American and 48 Chinese college students were selected from a larger study of culture and creativity. Drawings were judged by eight Chinese and six European Americans following the Consensual Assessment Technique. The drawings were coded by content to examine what the judges considered creative. Results showed high consensus between European American and Chinese judges and great similarity in the creativity of drawings generated by the two groups. Judges liked best those drawings they judged more creative. The most creative drawings typically involved representations of geometric shapes in contexts (either concrete or abstract). Results run counter to the belief that there are wide cultural variations in the evaluation of and attitudes toward creativity, demonstrate the feasibility of cross-cultural comparisons with the Consensual Assessment Technique, and provide a basis for further cross-cultural research on creativity.

CREATIVITY IN DRAWINGS OF GEOMETRIC SHAPES
A Cross-Cultural Examination With the Consensual Assessment Technique

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For the past two decades, cultural and cross-cultural perspectives on human behavior have found their way increasingly into mainstream psychology. Major American Psychological Association and American Psychological Society journals have featured more and better articles on culture, with the result that our understanding of human behavior in cultural context has been greatly enriched. Yet despite the rapid growth in our understanding of the role of culture in human psychology, one area has been largely ignored: the cross-cultural study of creativity. In fact, the most recent reviews of research on creativity (Simonton, 2000) and of creativity and culture (Raina, 1999) have cited cross-cultural or cross-ethnic studies that were conducted in the 1960s and 1970s. Our own literature search confirmed that little research has been done on culture and creativity since the 1970s.

The last wave of cross-cultural research on creativity was based mainly on the paradigm and instruments developed by Torrance.[1] Research questions included the universality of the "fourth-grade slump" (a developmental dip in divergent thinking scores on the Torrance Tests for Creative Thinking), cross-cultural and cross-ethnic variations in the mean scores on Torrance tests, and gender differences in divergent thinking scores across cultures (see

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Raina, 1999, for a summary). Since the early 1980s, however, the Torrance tests have been criticized for their narrow scope and lack of demonstrable validity and for confounding creativity with verbal ability in the verbal subtests (Amabile, 1983; Hocevar & Bachelor, 1989). From the perspective of cross-cultural psychologists, cross-cultural research based on the Torrance tests also suffered the problem of using an "imposed etic" (Berry, 1989; Greenfield, 1997)—that is, what is defined as a creative response to Torrance tests in one culture was also defined as creative in another culture, without considering whether such a response was actually regarded as creative by individuals in the second culture (see Jones & Shea, 1974, for an early discussion of this issue when they used Torrance tests in Malawi and Papua New Guinea).

To remedy the problems with the Torrance tests, Amabile (1983) championed a new approach to the assessment of creativity—the Consensual Assessment Technique—that focuses on the subjective judgment of original products. Relying on the assumption that there exists a common (or common enough) understanding of what is creative, Amabile showed that groups of judges (typically numbering 6 to 12) can provide reliable and consensual assessment of the level of creativity. The advantages of this approach are obvious. In principle, it allows for the assessment of a wide range of creative products. It is indeed the only widely used method in product-based assessment of creativity (Hennessey & Amabile, 1999). It also has ecological validity because creative products in real life are judged subjectively by people rather than assessed by individuals according to artificially imposed criteria. Finally, the Consensual Assessment Technique is sensitive to cultural and historical variations in the judgment of creativity. It is basically a culture-specific or emic approach to evaluating creativity.

A strictly emic approach, however, is not particularly useful in cross-cultural research because it does not allow for direct cross-cultural comparisons. Fortunately, cross-cultural psychologists have proposed an approach to resolving the dilemma between imposed etic and emic approaches. Although many cultures (as well as historical eras) are different enough that each spawns its own unique, emic attributes that defy quantitative comparisons across place and time, there are also many universal or etic aspects of culture that arise from shared aspects of human nature that persist over many generations. The first task of a cross-cultural researcher is to determine whether a particular aspect of human behavior can be compared across cultures. Berry (1989; also see Segall, Lonner, & Berry, 1998) has proposed the "derived etic" approach. In that approach, researchers start out by examining the emic or culture-specific definitions of a particular psychological construct and then compare the various emic definitions from different cultures. The common aspects of emic definitions from different cultures can be considered to be etic and are called the derived etic.

Using the derived etic approach, this study extends the use of Amabile's (1983) Consensual Assessment Technique to cross-cultural comparisons of creativity. The aims of this investigation are to examine whether judgment about creativity is necessarily restricted to a narrow cultural range and to identify features that help define creativity within and across cultures. In order to obtain a derived etic that has broader implications for future research in this area, we selected two major contemporary cultures that vary greatly in many respects. European Americans in the United States and Chinese in China differ in their cultural values, economic development, and type of artistic creativity (Hsu, 1981). If we can derive some etic aspects of creativity from studying these two distinctly different groups, the conclusions should have a reasonable chance of being applicable to many other cultural groups.

Creativity is involved in a wide range of activities. Researchers have studied major creative activities such as generating revolutionary scientific ideas (e.g., the theory of relativity), creating significant art works and architectural structures, and writing novels and poems, as well as minor forms of creativity that occur in daily life (e.g., Richards, Kinney, Benet, & Merzel, 1988). For this study, we selected creativity in drawing tasks. Drawing tasks have been used in many previous studies of creativity. In addition to the commonly used Circles Test by Torrance, other measures of creativity have included still-life drawings (e.g., Csikszentmihalyi & Getzels, 1971), drawings created after viewing visual images (e.g., Sobel & Rothenberg, 1980), drawings created in response to verbal stimuli such as "earth from an insect's point of view" or "the beginning of time" (e.g., Sternberg & Lubart, 1995), the Draw-a-Person test (Solar, Bruehl, & Kovacs, 1970), and drawings of fantastic animals (e.g., Pine & Holt, 1960). Drawing tasks are a good starting point for cross-cultural research using the Consensual Assessment Technique because they rely minimally on language and thus largely eliminate this source of potential measurement errors. It should be noted that in addition to creativity involved in the production of drawings, researchers (e.g., Barron, 1953; Welsh, 1975) have also used preferences of drawings to measure creative ability.

This study addresses three main research questions: (a) Are there cultural differences in the judgment of drawing creativity? (b) Are there cultural differences in the average levels of creativity in drawings? and (c) Which features define creative drawings within and across cultures? These questions have to be addressed in sequence because, without commonality in judgment of creativity, there can be no culturally unbiased way of comparing creativity across groups, and the features of products (here, drawings) that define creativity would therefore be culture specific.

There certainly is reason to believe that cultures may differ in their judgments of the creativity of drawings. Different cultural groups have generated visual representations that are drastically different in style and content. There seems to be little common ground, for example, between Chinese ink paintings and Western oil paintings (Sullivan, 1997). Given such an artistic chasm, one might suspect that what is considered to be a creative drawing in one culture would not necessarily convey the same assessment in another culture. As Amabile (1996) has repeatedly asserted,

> The judgments obtained by [the Consensual Assessment Technique] are necessarily limited by historical time and place. It is doubtful, for example, that a group of Italian Renaissance painters would agree well with a group of contemporary American artists in their creativity judgment of a set of Impressionist art works. Clearly, the shared subjective criteria of creativity in any domain of endeavor do change over time and do differ across cultures. (pp. 65-66)

Nonetheless, some limited empirical evidence suggests transcultural similarity in creativity judgment. More than three decades ago, Irvin Child and his colleagues found cross-cultural similarities in aesthetic judgment in their studies of artists and artisans in Japan, the Fiji Islands, a Bantu tribe, and the United States (Child, 1968; Iwao, Child, & Garcia, 1969). Cross-cultural similarity in art judgment was also reported for laypersons in a small study in which 10 Indian villagers, 10 Indian college students, and 10 Canadian college students judged the reproductions of 10 Western paintings dating from the Renaissance to the 20th century (Berlyne, 1976). Cross-cultural similarities were further found in aesthetic preferences for drawings, decorative objects, and geometric shapes (Silver, 1983; Welsh, 1969). Taken together, these studies suggest that there may be derived etic aspects of creativity judgment and that, as a result, the Consensual Assessment Technique can be extended to cross-

cultural research. As noted earlier, this is important because only after we determine that there exist derived etic aspects of creativity can we proceed to examine cross-cultural similarity or differences in the level of creativity.

There has been little comparative research on creativity involving Chinese. Furthermore, prior research on the levels of divergent thinking of Americans and Chinese has shown inconsistent patterns. Ball and Torrance (1978) found that Chinese and other East Asians scored higher than Americans and Europeans on Torrance's visual perspective test. In a lifespan study, however, Jaquish and Ripple (1984-1985) found that Americans of all ages scored significantly higher on tests of divergent thinking abilities than did Chinese in Hong Kong. Recently, Rudowicz, Lok, and Kitto (1995) found that Chinese children in Hong Kong scored higher on the figural Torrance tests than American, Singaporean, and Taiwanese children but lower than German children. The results were reversed for verbal tests. These conflicting results from different studies are likely due to many factors. One possible factor is their imposed etic approach, which occurs, for example, when Torrance tests are used (as discussed above). Other possible factors include small-sample and outdated comparison data.

Research on Chinese and American children's drawings has also suggested possible cross-cultural differences in drawing abilities and creativity. Several researchers (Cox, 1992; Gardner, 1989; Winner, 1989) have commented on Chinese children's superior technical skills as compared to those of their American and British counterparts. Such differences in skills were attributed to the differing views and practices about art education in China (i.e., practices that emphasize drawing skills) versus the United States (i.e., practices that emphasize creativity). It is not clear whether such differential views and practices have actual consequences. In an unpublished study, Huntsinger, Liaw, Schoeneman, and Ching (1995) have shown that Chinese children displayed a higher level of creativity as well as drawing skills on the Draw-a-Person test than did American children. Cox, Perara, and Fan (1998), however, found that only those Chinese children who took art classes on weekends had an advantage over their British counterparts.

The third part of this study is analyzing the objective features that define creative drawings within and across cultures. There are several ways of identifying such features. Amabile (1996) has examined correlations between objective measures of collage designs (e.g., number of colors used) and judges' creativity ratings. This approach is limited in its usefulness because it deconstructs a creative product into its components, whereas the key feature of creativity often lies in the wholeness or integration of parts. Amabile (1996) has also examined the intercorrelations between the different dimensions (e.g., uniqueness and technical quality) of the judges' ratings to identify dimensions that are closely related to creativity. This approach helps clarify the criteria judges use for creativity judgment (uniqueness, novelty, etc.), but it does not help us understand what, specifically, is unique or novel or creative about the creative products. In this study, therefore, we took a first step toward understanding the features of creative drawings by coding the drawings in terms of their thematic representations.

In summary, this study was carried out in four steps: the generation of a large number of drawings, selection and compilation of the drawings for cross-cultural judgment, judgment of all drawings by both Chinese and American judges according to the procedure of the Consensual Assessment Technique, and thematic coding of the drawings to allow for an understanding of what was judged to be creative by the two groups of judges.

METHOD

PARTICIPANTS

As part of a larger project on culture and creativity, 50 European Americans and 48 Chinese drew representations of geometric shapes. These participants were selected from a larger sample of 248 participants in the United States and 278 participants in China. They were enrolled in social science courses in a comprehensive university in each location. The U.S. sample in the larger study was diverse in terms of ethnicity (74 European Americans, 96 Asian Americans, 39 Latinos, 4 African Americans, 28 others, and 7 unidentified). To avoid the confounding of ethnicity in this study of culture and drawing creativity, only European Americans were included. From the larger sample, we intended to select a stratified random sample of 50 participants from the European American sample and 50 from the Chinese sample (an equal number of males and females and an equal number of participants from each of two instruction conditions), but a clerical error (i.e., a duplicated identification number) resulted in the deletion of 2 Chinese cases. The final samples were evenly distributed across gender and instruction conditions. We limited our samples for this study to 50 per group because of the time-consuming and complex nature of cross-cultural judgment tasks and because we had only 74 European Americans in the larger sample. The mean age of the selected participants was 23.50 (United States) and 21.80 (China). The higher mean age for the U.S. sample was a result of 6 returning students (30 or older). The median age for both groups was 21.

DRAWING TESTS

All participants took a battery of creativity tests. For this study, we focused on drawings of three geometric shapes. Participants were instructed to draw pictures with the titles Triangle, Rectangle, and Circle.[2] Commonplace stimuli such as these allow for wide variation in responses, that is, for both noncreative and creative responses. In contrast, the use of unusual stimuli is likely to result in unusual pictures because of a lack of established, conventional notions about how such stimuli might be represented (e.g., the drawings of a "zoglet" or of "the universe before the Big Bang"). Judges' ratings of such pictures tend to be positively skewed (i.e., toward creative). Furthermore, the selected geometric shapes should be relatively similar in meaning and affective response across cultures.

Prior research (Harrington, 1975) has shown that creativity test scores are influenced by explicit instructions to "be creative." To ensure that cross-cultural comparisons were not confounded by testing conditions, half of the participants were randomly assigned to a *be creative* condition, whereas the other half were assigned to a *standard* condition (i.e., no explicit request for being creative). The specific instruction for the be-creative condition was, "Drawing Creatively: This task involves drawing creatively. We want you to create drawings that are highly creative, imaginative. That is, please create drawings that are both original (novel, uncommon) and also appropriate (artistically effective)." The instruction for the standard condition was, "Visual Imagery: This task involves drawing visual images in response to verbal stimuli. We want you to make drawings that you personally find intuitively or subjectively appealing or 'right' to you." The participants were told they had 10 minutes for a set of eight drawings (only the three geometric shapes are examined in this study).

RATINGS OF DRAWINGS

Each drawing from the selected participants was removed from its original packet and pasted onto a separate 4-inch by 5-inch index card. Each of these 294 original drawings was evaluated in China by eight Chinese judges (four male and four female) and in the United States by six European American judges (two male and four female). All judges were undergraduate students majoring in social sciences who had had little or no formal art training other than what is in the regular school curriculum. We recruited undergraduate students as judges for reasons of economy and because previous research (Amabile, 1996; Sternberg & Lubart, 1995) has shown that peers provide reliable and valid judgments.

Using a 5-point scale, the judges rated all drawings along four dimensions: creativity, uniqueness, technical quality, and liking. These dimensions were adapted from Amabile (1996). For the *creativity* and *liking* dimensions, judges were instructed to use their own subjective definition of creativity and rely on their subjective reaction to the drawing, respectively. *Uniqueness* was defined as the degree to which the drawing showed a novel representation. *Technical quality* was defined as the degree to which the drawing demonstrated technical artistic ability. All judges rated the drawings independently. To avoid order effects, each judge shuffled the drawings before and after he or she judged all the drawings of a particular shape. The order of judging drawings of the three shapes was also randomized across the judges. For example, one judge might have judged triangles first, followed by circles, and then rectangles; whereas another judge might have judged drawings in the order of circles, triangles, and rectangles. Before shuffling and judging the drawings of a particular shape, judges were instructed to look through the whole stack of drawings to get a feel for the range of quality and content of drawings. Judges were kept blind to the cultural origin of the drawings, although 3 of the 294 drawings contained English words and another 3 contained Chinese characters that might have given away the cultural identity of the person who drew the pictures. In fact, 1 drawing featuring an English word was made by a Chinese. An additional drawing had an embedded Chinese character that may or may not have been obvious to an average American judge.

CODING OF OBJECTIVE FEATURES

Finally, each drawing was coded by two independent coders (who did not participate in the previously described judging task) according to seven categories of thematic contents (see the appendix). The coding categories were developed after a group of undergraduate research assistants (including European, African, Asian, and Hispanic Americans) examined samples of the drawings. All coding was done in the United States. The six coders included two European Americans, two Asian Americans, one African American, and one Hispanic American, all of whom had little or no formal art training. The intercoder reliability (kappa) was .73 for triangles, .74 for rectangles, and .79 for circles.

RESULTS

INTERJUDGE AGREEMENT WITHIN EACH CULTURE

To examine whether there are cross-cultural similarities and differences in the judgment of creativity, we first need to establish interjudge consistency within each culture. Table 1

TABLE 1
Interjudge and Interitem Reliability Statistics (Cronbach's alphas)

	United States	*China*
Interjudge reliability by item		
Triangle		
Creativity	.96	.96
Uniqueness	.96	.97
Technical quality	.90	.88
Liking	.84	.85
Rectangle		
Creativity	.98	.95
Uniqueness	.97	.96
Technical quality	.92	.88
Liking	.87	.83
Circle		
Creativity	.96	.94
Uniqueness	.97	.95
Technical quality	.87	.91
Liking	.83	.87
Interitem reliability		
Creativity	.91	.92
Uniqueness	.90	.91
Technical quality	.76	.82
Liking	.84	.85

shows the interjudge agreement calculated as Cronbach's alpha. Clearly, there was a high level of agreement between judges within each culture in their perceptions of variations in the creativity of drawings. Similarly, judges within each culture agreed on the levels of uniqueness, technical quality, and liking. Furthermore, the three drawings had high interitem consistency (see the bottom panel of Table 1). In other words, from the perspective of judges who did not know the identity of the participants, individuals who drew a creative drawing for one geometric shape were very likely to draw a creative one for another geometric shape. This finding indicates that there are reliable individual differences in drawing creativity and ability on the present experimental task.

CROSS-CULTURAL AGREEMENT IN JUDGMENT

One of the central questions of this study is whether people from different cultures agree in their judgment of the creativity of drawings. Given the within-culture consistency in judgment, we can now examine cross-cultural agreement. Table 2 shows the correlations between European American and Chinese judges. Cross-cultural agreement was remarkably high and suggests that there were no significant cultural biases. (Recall that the drawings were made by persons from two different cultures.) To further illustrate the level of cross-cultural agreement and to examine whether such agreement is limited to a particular range of creativity (e.g., drawings at the high end of the scale), we plotted the judgment scores of Chinese judges against those of European American judges. As Figure 1 clearly shows, high agreement between the two groups of judges occurred across the whole range of creativity. Figure 1 also shows the regression equations for ratings by Chinese judges as predicted by ratings by

TABLE 2
Correlations Between European American and Chinese Judges

	Triangle	*Rectangle*	*Circle*	*Total*
Creativity	.93	.94	.95	.97
Uniqueness	.96	.94	.95	.97
Technical quality	.88	.86	.86	.93
Liking	.84	.87	.89	.93

NOTE: All correlations were significant at $p < .001$.

European American judges. The *Y* intercepts for all four equations were positive, indicating that Chinese judges on average appeared to judge the drawings more positively. The intercepts differed significantly from 0 for creativity, uniqueness, and technical quality, with *t*s ranging from 3.86 to 10.75, *p*s < .001; but only marginally for liking, $t = 1.90$, $p = .06$. In other words, although there was a high level of agreement about the *relative* creativity, technical quality, uniqueness, and liking of the drawings, European American and Chinese judges differed significantly in the *absolute* scores they assigned to these drawings.

Finally, we examined within-culture correlations between ratings of creativity and of liking. Results showed that for both groups, how much the judges liked a drawing was highly correlated with how creative they rated it to be, $r = .95$ for both cultures.

COMPARISONS OF EUROPEAN AMERICAN AND CHINESE DRAWINGS

Because judgments of creativity were reliable both within and across cultures in this study, we can now examine whether there are cultural differences in the level of creativity of drawings. It is possible that judges from both cultures can differentiate between creative and noncreative drawings produced by the cultures but that judges systematically evaluate drawings made in one culture as lower in creativity. Table 3 shows the means and standard deviations of creativity ratings, along with associated *F* statistics based on two-way (Culture × Instruction Condition) ANOVAs. Preliminary analyses did not reveal any significant gender differences, so data were not presented by gender. As is obvious from examination of Table 3, there were significant effects of instruction condition—as might be expected, drawings done under be-creative instructions were rated higher in creativity, but there were no significant cultural differences or Culture × Instruction interactions. Also obvious from Table 3 are the generally higher judgment scores by Chinese judges than by European American judges as mentioned in the above discussions about the regression intercepts.

The lack of a significant interaction between culture and instruction condition indicates that the two conditions yielded similar results across cultures. However, item analyses revealed significant differences in variance and response distributions between the standard and be-creative conditions. Drawings produced in the be creative condition showed greater variance and more normal distribution than those produced in the standard condition.[3] The former are thus better fitted for conventional statistical analyses.

IDENTIFYING OBJECTIVE FEATURES OF CREATIVE DRAWINGS

The finding that two groups with substantially different histories and cultural values differed little in the creation and evaluation of drawings supports the existence of etic, or transcultural, aspects of drawing creativity. We then explored the thematic features that

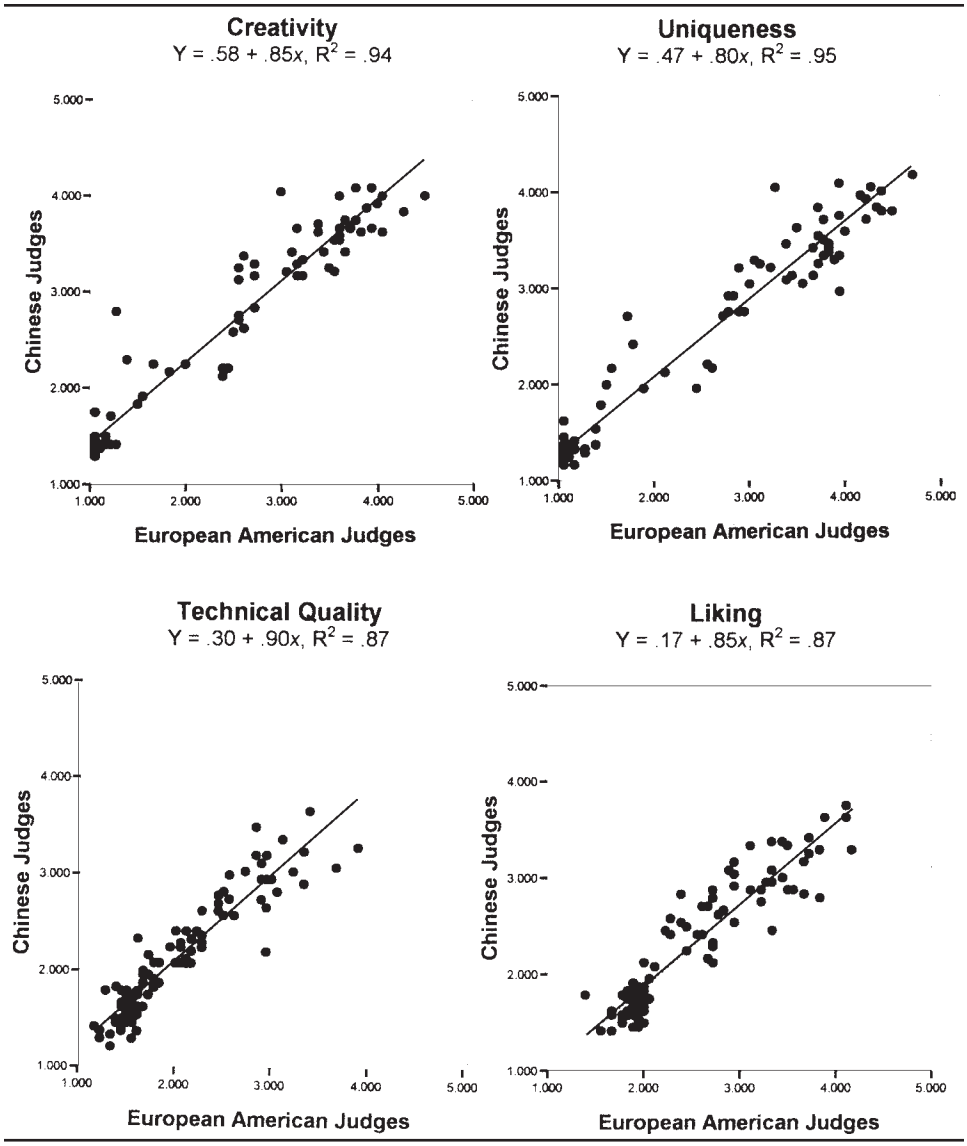


Figure 1: Scatter Plots of Judgment Scores Made by Chinese Against Those Made by European Americans

define creative drawings. All drawings were coded according to seven categories of thematic contents. Figure 2 shows the mean creativity ratings of all judges for each category of thematic contents. Drawings that involved an alternative (nongeometric) interpretation (e.g., a "circle" of friends, a relationship "triangle") or an usual perspective of the geometric shapes that can only be partially seen in the drawing, were judged to be the most creative, followed by drawings that showed the geometric shapes in concrete contexts (e.g., triangles in Egyptian pyramids). Drawings that showed decorated geometric shapes, multiple geometric shapes, and simple examples of real-life geometric shapes (e.g., the sun as a circle) were judged to be moderately creative.

ANOVAs showed that the mean creativity ratings of the seven categories of drawings differed significantly, $F(6, 286) = 334.06$, $p < .001$. Post hoc Scheffé contrasts revealed the

TABLE 3
Means (with standard deviations) and Associated *F* Statistics of Judgment Scores

	European American Drawings		*Chinese Drawings*		F *Statistics (*df = *1, 94)*		
	Standard Condition	*Be-Creative Condition*	*Standard Condition*	*Be-Creative Condition*	*Culture*	*Condition*	*Interaction*
Creativity							
EA judges	1.55 (0.99)	2.85 (1.07)	1.50 (0.90)	2.61 (1.05)	0.54	35.03*	0.20
Ch judges	1.83 (0.84)	2.99 (0.91)	1.79 (0.77)	2.89 (0.91)	0.19	42.05*	0.03
Uniqueness							
EA judges	1.65 (1.15)	3.06 (1.15)	1.56 (0.97)	2.86 (1.13)	0.41	36.40*	0.05
Ch judges	1.72 (0.85)	2.96 (0.94)	1.68 (0.79)	2.84 (0.94)	0.20	45.63*	0.05
Technical quality							
EA judges	1.72 (0.43)	2.39 (0.69)	1.77 (0.51)	2.19 (0.67)	0.41	20.63*	1.09
Ch judges	1.82 (0.47)	2.51 (0.59)	1.79 (0.42)	2.34 (0.65)	0.78	31.47*	0.45
Liking							
EA judges	2.16 (0.56)	2.95 (0.74)	2.15 (0.50)	2.70 (0.74)	0.98	26.17*	0.83
Ch judges	1.92 (0.48)	2.73 (0.62)	1.91 (0.49)	2.56 (0.61)	0.67	41.59*	0.46

NOTE: EA = European American; Ch = Chinese.
*$p < .001$.

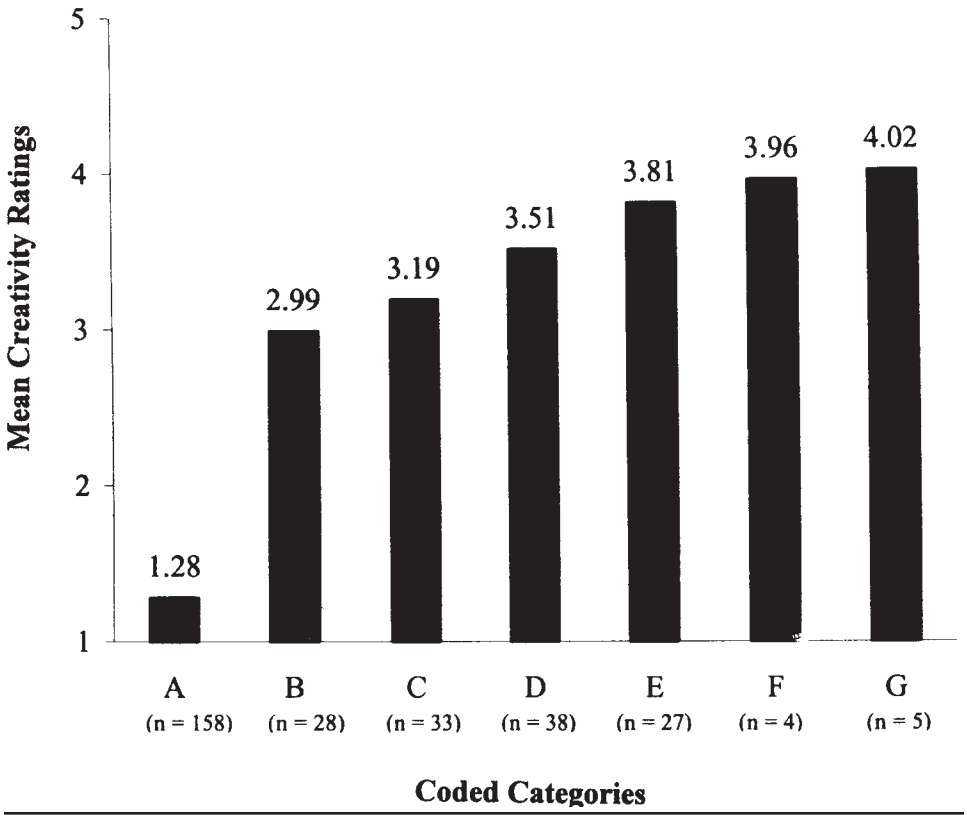


Figure 2: Average Scores of Creativity Judgment for Drawings by Coded Categories

following significant differences: Category A drawings were judged to be less creative than all the other categories of drawings (*p*s < .001); Category B drawings were less creative than those in Categories D, E, F, and G (*p*s < .01); and Category C drawings were less creative than those in Categories F and G (*p*s < .01). One reason for a lack of significant differences among Categories D, E, F, and G was the small sample size of these categories.

It is also worth noting that the more creative drawings were typically made by fewer participants (see Figure 2 for the frequency of drawings for each category), a finding consistent with the use of originality scores as an indicator of creativity. Readers may want to code their own drawings with due attention to possible biases. Figure 3 shows two examples of highly rated drawings for each geometric shape produced by participants in this study.

DISCUSSION

Researchers have long been concerned about the potential problems involved in cross-cultural comparisons of tests of mental abilities (Greenfield, 1997). One of the major concerns is whether there is "universal agreement on the value or merit of particular responses to particular questions" (Greenfield, 1997, p. 1116). Few studies have been carried out to address such concerns. In this study of creativity in drawing, we assessed the agreement

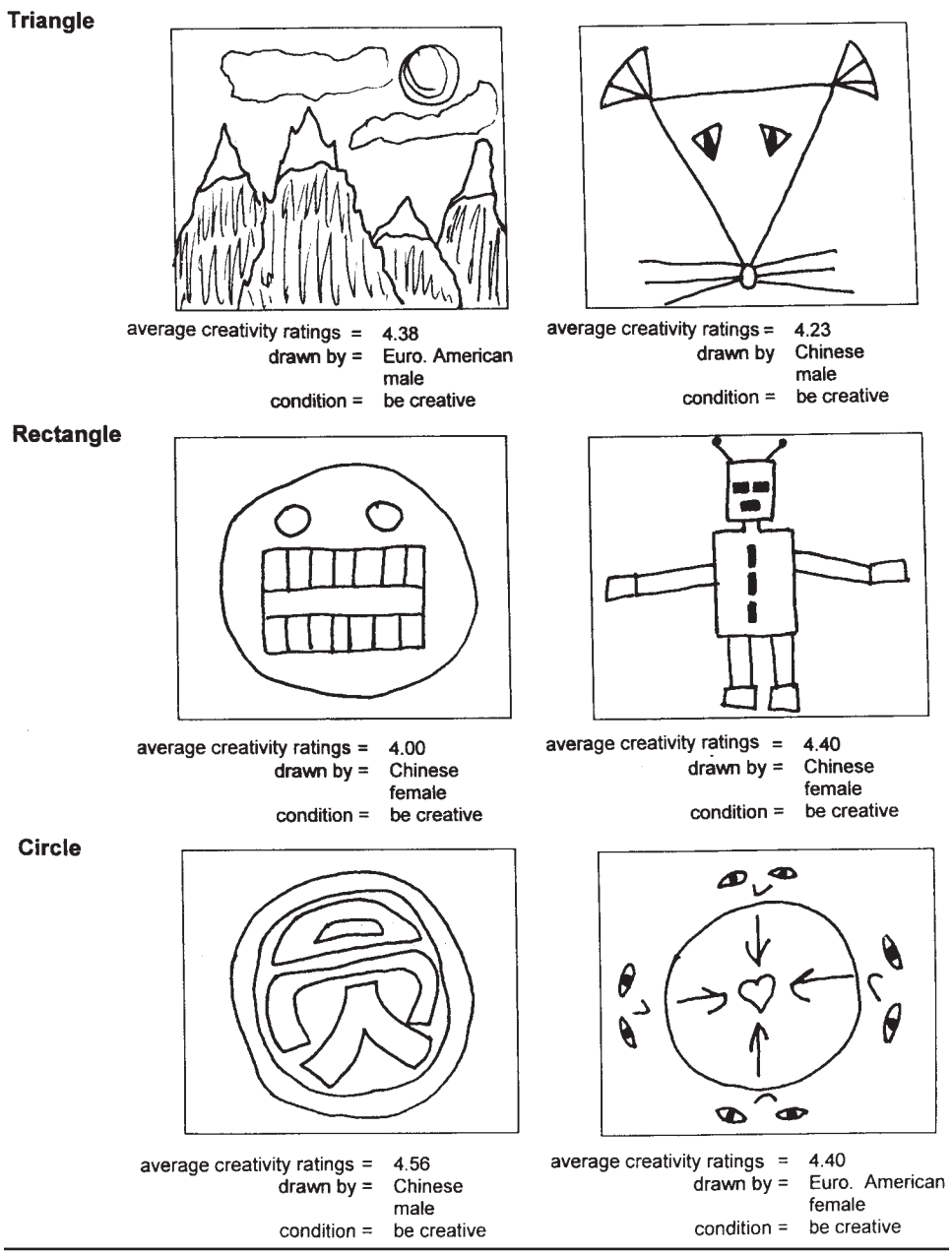


Figure 3: A Sample of Highly Rated Drawings for Each Geometric Shape

between European Americans and Chinese on the merit of particular drawings. Following the procedure of attaining a derived etic (i.e., developing a transcultural construct through examination of that construct from each culture's perspective [Berry, 1989]), we extended Amabile's (1983, 1996) Consensual Assessment Technique to cross-cultural research.

We call attention to several important conclusions. Notably, European American and Chinese judges exhibited striking similarity in their evaluation of creativity on the drawing tasks we used. Given the great differences between Chinese and American cultures, the near-perfect correlation between European American and Chinese judges counters the belief that all judgments of creativity are necessarily bound by culture (Amabile, 1996). If the findings of this study should emerge in other domains of creativity (such as verbal creativity) and across other cultural groups, we can eventually establish the existence of etic or transcultural aspects in creativity that allow for meaningful cross-cultural comparisons of creativity.

The high level of cross-cultural agreement concerning level of creativity indicates that there were no significant cultural biases in judging creativity of drawings. On the surface, this finding appears to be inconsistent with the existing literature on ethnocentric biases in creativity judgment (Kasof, 1999). Researchers typically have found that judges evaluate in-group creations more positively than they evaluate out-group creations (e.g., Griswold, 1987; also see Greenwald & Schuh, 1994). There are several possible explanations for these discrepant findings. First, unlike in most previous studies, the cultural identities of the creators in this study were unknown to the judges. This finding suggests that ethnocentric biases are not evident or are minimized when the cultural origin of the creator is unknown. Perhaps much of the previously reported ethnocentric biases in creativity research can be attributed to the knowledge of creator's ethnicity.[4] Second, drawings of geometric shapes—the tasks used in this study—may be generally familiar in both cultures, whereas some of the research on ethnocentrism in creativity judgment focuses on creative products that are more familiar in some groups than others (e.g., rap music is more familiar to African Americans than to European Americans and to Americans in general than to Chinese).[5] A difference in familiarity might introduce differences in judgment. Future research should address these possibilities and determine the conditions under which creative products can be judged cross-culturally with minimal biases.

It is also worth noting that there was a modest but significant difference in the criteria the Chinese and European American judges used when judging the drawings on the four dimensions we measured. One possible explanation stems from differences in their level of self-serving and self-effacing biases. Chinese as well as other East Asians have been found to show a lower level of self-serving biases but a higher level of self-effacing biases than Westerners (e.g., Bond, 1991; Heine & Lehman, 1997). Because judges with self-effacing biases are likely to think others to be better than themselves, they would likely view the drawings by others to be more creative, technically skilled, and unique in their ideas. Judges with self-serving biases would do the opposite. Although the instructions for making judgments were specific about using the current set of drawings as a frame of reference, it is possible that some cultural tendencies in self-serving or self-effacing biases might have shifted the criteria of judgment. Future research is needed to further test this hypothesis.

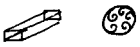
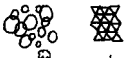
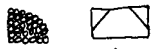
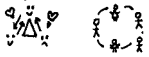
Interestingly, we found that both European American and Chinese judges liked drawings that they and others rated as being creative. This finding is consistent with that of Amabile's (1983, p. 44) study of children's collages as judged by artist-judges. The correlation between liking and creativity was .72. This is not surprising, because creativity is commonly defined as involving a positive evaluation (see Kasof, 1995). What is new in our finding is that the association between liking and creativity was equally strong for both cultural groups. This finding of cultural similarity in attitudes toward creativity appears to contradict some discussions about variations in cultural values of creativity (e.g., Lubart, 1998; Ludwig, 1992). Such discussions typically contrast individualist societies' (such as the United States) emphasis on the value of being unique and creative with collectivist cultures' (such as the

Chinese) emphasis on the values of conformity and tradition. Empirical data, however, have sometimes contradicted this assumption. Using Schwartz's (1994) value scales, two separate studies (Schwartz, 1994; Triandis, McCusker, & Hui, 1990) found that Chinese valued creativity more highly than did Americans. Similarly, in a study of preferences in friendships, Goodwin and Tang (1991) found that Chinese stress creativity as a preferred characteristic to a greater extent than their British counterparts. It should be noted, however, that our finding should not be overinterpreted due to the limited measures of attitudes toward creativity and the extremely high correlations between the ratings of liking and creativity.

The two cultural groups did not differ in their mean level of creativity under either the standard or the be-creative conditions. That is, instruction condition did not systematically bias cross-cultural comparisons. It appears to be justified, therefore, to recommend the be-creative condition for future research, for two reasons. First, data collected under that condition showed more normal distributions, an advantage when researchers use conventional statistical analyses. Second, as is the case for most ability and intelligence tests, the be-creative condition ensures that the test takers are aware of the general criteria for evaluating their responses (i.e., whether the responses are correct in the case of intelligence tests and whether they are novel and appropriate in the case of creativity tests [Harrington, 1975]). Participants' understanding of task demands increases the likelihood of their performing in a manner that reflects their potential.

Finally, several limitations of this study should be noted. First, because we gathered data from only China and the United States, however different they are from each other, it remains to be established whether our findings of cross-cultural agreement in judgment generalize to other cultures. Second, because this study used judgments of only three kinds of creations (drawings made in response to the names of geometric shapes), it is unknown whether our results will generalize to judgments of other kinds of creations. Finally, because we did not measure the level of art training of the participants, we were unable to include that important variable as a covariate for the analyses of cultural differences in drawing creativity. Each of these limitations should be addressed in future research.

APPENDIX
Thematic Coding of Drawings

Code	*Examples*
A. Simple, straightforward, or typical shapes	
B. Decorated or three-dimensional shapes	
C. Multiple shapes, embedded or arranged	
D. Simple but meaningful shapes	
E. The shape in concrete context	
F. Reflections of the shape, unique perspectives	
G. The shape in abstract context	

NOTES

1. It should be pointed out that we are focusing on research that deals with cross-cultural comparisons. Some studies (e.g., Simonton, 1988, 1997) have used historical data from different cultures to test a general theory, whereas others (e.g., Khaleefa, Erdos, & Ashria, 1996, 1997) have examined indigenous issues about creativity in a single culture. Neither of these two types of research involves direct comparisons of creativity (products or processes) across cultures.

2. Some readers might wish to spend up to a minute and a half on the following task before proceeding with the remainder of the article: Please make a drawing that is highly creative and imaginative with the title "Triangle."

3. Levene's test of equality of variances revealed significant differences in variance for technical quality and liking between the two conditions, Fs(1, 96) = 4.51 to 8.86, ps < .05. The differences in ratings of creativity and uniqueness were not statistically significant, Fs(1, 96) = 1.14 to 2.54, ps > .10. Skewness for the *standard* condition was 1.72 (creativity), 1.68 (uniqueness), 1.36 (technical quality), and 1.63 (liking), where 0 indicates no skewness and 1.50 or –1.50 is considered the cutoff point for acceptable normality. In contrast, the skewness for the *be creative* condition was –0.56 (creativity), –0.62 (uniqueness), 0.11 (technical quality), and –0.23 (liking). Similarly, the statistics for kurtosis indicated a more normal distribution for the be-creative condition. The kurtosis for the standard condition was 1.56 (creativity), 1.35 (uniqueness), 0.94 (technical quality), and 1.65 (liking); and the corresponding statistics for the be creative condition were –1.05, –0.96, –1.01, and –0.86.

4. In fact, studies that have held constant the objective characteristics of original products while experimentally manipulating the creator's apparent group membership have clearly shown that ethnocentric biases were a result of the knowledge of the creator's group membership (Blake & Mouton, 1962; Brown, Collins, & Schmidt, 1988; Dustin & Davis, 1970; Ferguson & Kelley, 1964; Fried, 1996; Gerard & Hoyt, 1974; Long, Spears, & Manstead, 1994; Worchel, Lind, & Kaufman, 1975).

5. Nevertheless, if a set of less universal verbal stimuli were used, there would likely be more culturally oriented drawings. For example, when asked to create stories about the adventures of an animal, Chinese children were more likely to feature dragons and pandas, and less likely to feature unicorns and cougars, than were Canadian children (Harvey, Ollila, Baxter, & Guo, 1997). Cultural differences in the objective content of original products may function as a basis of group-based differences in evaluation of original products (see Note 4).

REFERENCES

Amabile, T. M. (1983). Social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology*, *45*, 357-377.

Amabile, T. M. (1996). *Creativity in context*. Boulder, CO: Westview.

Ball, O. E., & Torrance, E. P. (1978). Culture and tendencies to draw objects in internal visual perspective. *Perceptual and Motor Skills*, *47*, 1071-1075.

Barron, F. (1953). Complexity-simplicity as a personality dimension. *Journal of Abnormal and Social Psychology*, *48*, 163-172.

Berlyne, D. E. (1976). Similarity and preference judgments of Indian and Canadian subjects exposed to Western paintings. *International Journal of Psychology*, *11*, 43-55.

Berry, J. W. (1989). Imposed etics-emics-derived etics: The operationalization of a compelling idea. *International Journal of Psychology*, *24*, 721-735.

Blake, R. E., & Mouton, J. S. (1962). Overevaluation of own groups product in ingroup competition. *Journal of Abnormal and Social Psychology*, *64*, 237-238.

Bond, M. H. (1991). *Beyond the Chinese face: Insights from psychology*. Hong Kong: Oxford University Press.

Brown, J. D., Collins, R. L., & Schmidt, G. W. (1988). Self-esteem and direct versus indirect forms of self-enhancement. *Journal of Personality and Social Psychology*, *55*, 445-453.

Child, I. L. (1968). The experts and the bridge of judgment that crosses every cultural gap. *Psychology Today*, *2*, 24-29.

Cox, M. (1992). *Children's drawings of the human figure*. Hove, UK: Erlbaum.

Cox, M. V., Perara, J., & Fan, X. (1998). Children's drawing ability in the UK and China. *Psychologia: An International Journal of Psychology in the Orient*, *41*, 171-182.

Csikszentmihalyi, M., & Getzels, J. W. (1971). Discovery-oriented behavior and the originality of creative products: A study with artists. *Journal of Personality & Social Psychology*, *19*, 47-52

Dustin, D. S., & Davis, H. P. (1970). Evaluative bias in group and individual competition. *Journal of Social Psychology*, *80*, 103-108.

Ferguson, C. K., & Kelley, H. H. (1964). Significant factors in overevaluation of own-group's product. *Journal of Abnormal and Social Psychology*, *69*, 223-228.
Fried, C. B. (1996). Bad rap for rap: Bias in reactions to music lyrics. *Journal of Applied Social Psychology*, *26*, 2135-2146.
Gardner, H. (1989). *To open minds: Chinese clues to the dilemma of contemporary education*. New York: Basic Books.
Gerard, H. B., & Hoyt, M. F. (1974). Distinctiveness of social categorization and attitude toward ingroup members. *Journal of Personality and Social Psychology*, *29*, 836-842.
Goodwin, R., & Tang, D. (1991). Preferences for friends and close relationships partners: A cross-cultural comparison. *Journal of Social Psychology*, *131*, 579-581.
Greenfield, P. M. (1997). You can't take it with you: Why ability assessments don't cross cultures. *American Psychologist*, *52*, 1115-1124.
Greenwald, A. G., & Schuh, E. S. (1994). An ethnic bias in scientific citations. *European Journal of Social Psychology*, *24*, 623-639.
Griswold, W. (1987). The fabrication of meaning: Literary interpretation in the United States, Great Britain, and the West Indies. *American Journal of Sociology*, *92*, 1077-1117.
Harrington, D. M. (1975). Effects of explicit instructions to "be creative" on the psychological meaning of divergent thinking test scores. *Journal of Personality*, *43*, 434-454.
Harvey, C. B., Ollila, L., Baxter, K., & Guo, S. Z. (1997). Gender-related and grade-related differences in writing topics in Chinese and Canadian children. *Journal of Research and Development in Education*, *31*, 1-6.
Heine, S. J., & Lehman, D. R. (1997). The cultural construction of self-enhancement: An examination of group-serving biases. *Journal of Personality and Social Psychology*, *72*, 1268-1283.
Hennessey, B. A., & Amabile, T. M. (1999). Consensual assessment. In M. A. Runco & S. R. Pritzker (Eds.), *Encyclopedia of creativity* (pp. 347-359). San Diego, CA: Academic Press.
Hocevar, D., & Bachelor, P. (1989). A taxonomy and critique of measurements used in the study of creativity. In J. A. Glover, R. R. Ronning, & C. R. Reynolds (Eds.), *Handbook of creativity* (pp. 53-75). New York: Plenum.
Hsu, F.L.K. (1981). *Americans and Chinese: Passage to differences* (3rd ed.). Honolulu: University of Hawaii Press.
Huntsinger, C. S., Liaw, F.-R., Schoeneman, J., & Ching, W.-D. (1995, March). *Cultural differences in young children's drawing skills*. Paper presented at the Biennial Meeting of the Society for Research in Child Development, Indianapolis, IN.
Iwao, S., Child, I. L., & Garcia, M. (1969). Further evidence of agreement between Japanese and American esthetic evaluations. *Journal of Social Psychology*, *78*, 11-15.
Jaquish, G. A., & Ripple, R. E. (1984-1985). A life-span developmental cross-cultural study of divergent thinking abilities. *International Journal of Aging & Human Development*, *20*, 1-11.
Jones, J., & Shea, J. (1974). Some problems in the comparison of divergent thinking scores across cultures. *Australian Psychologist*, *9*, 47-51.
Kasof, J. (1995). Explaining creativity: The attributional perspective. *Creativity Research Journal*, *8*, 311-366.
Kasof, J. (1999). Attribution and creativity. In M. A. Runco & S. R. Pritzker (Eds.), *Encyclopedia of creativity* (pp. 147-156). San Diego, CA: Academic Press.
Khaleefa, O. H., Erdos, G., & Ashria, I. H. (1996). Creativity in an indigenous Afro-Arab Islamic culture: The case of Sudan. *Journal of Creative Behavior*, *30*, 268-282.
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.
Long, K., Spears, R., & Manstead, A. (1994). The influence of personal and collective self-esteem on strategies of social differentiation. *British Journal of Social Psychology*, *33*, 313-329.
Lubart, T. I. (1999). Creativity across cultures. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 339-350). New York: Cambridge University Press.
Ludwig, A. M. (1992). Culture and creativity. *American Journal of Psychotherapy*, *46*, 454-469.
Pine, F., & Holt, R. R. (1960). Creativity and primary process: A study of adaptive regression. *Journal of Abnormal & Social Psychology*, *61*, 370-379.
Raina, M. K. (1999). Cross-cultural differences. In M. A. Runco & S. R. Pritzker (Eds.), *Encyclopedia of creativity* (pp. 453-464). San Diego, CA: Academic Press.
Richards, R., Kinney, D. K., Benet, M., Merzel, A. P. (1988). Assessing everyday creativity: Characteristics of the Lifetime Creativity Scales and validation with three large samples. *Journal of Personality & Social Psychology*, *54*, 476-485
Rudowicz, E., Lok, D., & Kitto, J. (1995). Use of the Torrance Tests of Creative Thinking in an exploratory study of creativity in Hong Kong primary school children: A cross-cultural comparison. *International Journal of Psychology*, *30*, 417-430.
Schwartz, S. H. (1994). Beyond individualism/collectivism: New cultural dimensions of values. In U. Kim & H. C. Triandis (Eds.), *Individualism and collectivism: Theory, method, and applications* (pp. 85-119). Thousand Oaks, CA: Sage.
Segall, M. H., Lonner, W. J., & Berry, J. W. (1998). Cross-cultural psychology as a scholarly discipline: On the flowering of culture in behavioral research. *American Psychologist*, *53*, 1101-1110.

Silver, H. R. (1983). Selective affinities: Connoisseurship, culture, and aesthetic choice in a contemporary African community. *Ethos*, *11*, 87-126.
Simonton, D. K. (1988). Galtonian genius, Kroeberian configurations, and emulation: A generational time-series analysis of Chinese civilization. *Journal of Personality and Social Psychology*, *55*, 230-238.
Simonton, D. K. (1997). Foreign influence and national achievement: The impact of open milieus on Japanese civilization. *Journal of Personality and Social Psychology*, *72*, 86-94.
Simonton, D. K. (2000). Creativity: Cognitive, personal, developmental, and social aspects. *American Psychologist*, *55*, 151-158.
Sobel, R. S., & Rothenberg, A. (1980). Artistic creation as stimulated by superimposed versus separated visual images. *Journal of Personality & Social Psychology*, *39*, 953-961
Solar, D., Bruehl, D., & Kovacs, J. (1970). The Draw-A-Person Test: Social conformity or artistic ability? *Journal of Clinical Psychology*, *26*, 524-525
Sternberg, R. J., & Lubart, T. I. (1995). *Defying the crowd: Cultivating creativity in a culture of conformity.* New York: Free Press.
Sullivan, M (1997). *The meeting of Eastern and Western art* (Revised and expanded edition). Berkeley : University of California Press
Triandis, H. C., McCusker, C., & Hui, C. H. (1990). Multimethod probes of individualism and collectivism. *Journal of Personality and Social Psychology*, *59*, 1006-1020.
Welsh, G. S. (1969). Preferences for basic geometric shapes by American and Egyptian subjects. *International Journal of Symbology*, *1*, 58-66.
Welsh, G. S. (1975). *Creativity of intelligence: A personality approach*. Chapel Hill: University of North Carolina Press.
Winner, E. (1989). How can Chinese children draw so well? *Journal of Aesthetic Education*, *23*, 41-63.
Worchel, S., Lind, E. A., & Kaufman, K. H. (1975). Evaluations of group products as a function of expectations of group longevity, outcome of competition, and publicity of evaluations. *Journal of Personality and Social Psychology*, *31*, 1089-1097.

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