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Permalink
https://escholarship.org/uc/item/44n3r66j

Journal
Creativity Research Journal, 19(2-3)

ISSN
1040-0419

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Publication Date
2007

DOI
10.1080/10400410701397164

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Peer reviewed
Values and Creativity
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ABSTRACT: Does extrinsic motivation inhibit or foster creativity? Whereas previous researchers examined the effects of externally controlled extrinsic motivation on creativity, we focus on the effects of self-determined extrinsic motivation arising from one’s personally held core values. In this study, we present a theoretical argument which predicts that (a) creative behavior is fostered by certain value types, inhibited by other value types, and holistically related to the total integrative-dynamic pattern of value types identified by Schwartz (1994), and (b) creative performance is synergistically promoted by the interaction between the Self-Direction value type and intrinsic motivational orientation. These hypotheses were tested in a study of 248 undergraduates whose value priorities and intrinsic motivational orientation were measured by self-report and whose creative performance was assessed across multiple tasks in the verbal, artistic, and mathematical domains. All predictions were supported.

Is creativity fostered by certain types of motivation and hindered by other types of motivation? Nearly 50 years ago, Crutchfield (1961, 1962) proposed that creative thinking is facilitated by intrinsic motivation and inhibited by extrinsic motivation. Since then, many studies have examined the hypothesis that intrinsic motivation is conducive to creativity, and these studies have been largely supportive (e.g., Koestner, Ryan, Bernieri, & Holt, 1984; Kruglanski, Friedman, & Zeevi, 1971; for a review, see Amabile, 1996). Far less research attention has been paid to the hypothesis that extrinsic motivation is detrimental to creative performance. Moreover, the relatively few studies that have addressed extrinsic motivation have yielded mixed results, some researchers claiming negative effects of extrinsic motivation on creativity (e.g., Amabile, 1985), other researchers claiming positive effects (e.g., Boice, 1983; Eisenberger & Rhoades, 2001), and still others reporting mixed effects (Baer, Oldham, & Cummings, 2003).

The issue of whether extrinsic motivation prevents or promotes creativity has sparked intense debate, which has not yet been fully resolved (Collins & Amabile, 1999; Eisenberger & Shanock, 2003). Amidst this debate, however, an important shortcoming in the literature has been overlooked, namely, the unstated assumption that extrinsic motivation is always based on external contingencies of reward or punishment. In fact, extrinsic motivation need not be based on external contingencies. Deci and Ryan (1991) distinguish three types of extrinsic motivation, which differ in the degree to which the actor attributes his or her motivation externally (controlled motivation) versus internally (autonomous motivation). Two of these types of extrinsic motivation are experienced as externally controlled, that is, attributed principally to external causes. External motivation, the most externally controlled type, is based on external contingencies (e.g., financial rewards, fame, social approval) and has been the sole focus of researchers addressing the relationship of extrinsic motivation to creativity. Introjected motivation, the other form of externally controlled extrinsic

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motivation, is based on partially internalized normative pressure experienced as a sense of duty or obligation (e.g., doing a behavior because one feels one should or ought to do so). In Deci and Ryan’s formulation, only one type of extrinsic motivation is experienced as autonomous, that is, attributed principally to the self. Identified motivation, the term that Deci and Ryan used to refer to this self-determined extrinsic motivation, is based on fully internalized values that are experienced as one’s own personally endorsed core values (e.g., doing a behavior because one believes it will lead to consequences that one regards as deeply important).¹

Although both identified motivation and intrinsic motivation may be experienced as autonomous, they differ in that intrinsic motivation is the desire to perform an activity as an end in itself, rather than as a means to some other end (e.g., because one expects the activity to be sufficiently pleasant or interesting) whereas identified motivation is the desire to do an activity as a means to some end that one deems highly important. Eating ice cream is fun, but no one expects it to help fulfill their deepest life purposes or lead to important, highly valued consequences. Thus, eating ice cream may be driven by intrinsic not identified motivation. Conversely, working hard to complete the tedious experimentation and calculations one expects will yield a cure for cancer may be experienced as supremely important yet joyless and ponderous, and thus may be driven by identified not intrinsic motivation. In the research to be reported herein, we examine the relationship between identified motivation and creative behavior.

Although intrinsic motivation is often extolled as the central and crucial determinant of creativity (Amabile, 1996, p. 115), several considerations led us to question whether identified motivation might be of comparable, or of even more fundamental, importance. First, many studies have revealed that identified motivation predicted various behaviors more strongly than did any other type of motivation, including intrinsic motivation (Koestner, Losier, Vallerand, & Carducci, 1996; Losier & Koestner, 1999; Losier, Perreault, Koestner, & Vallerand, 2001; Sheldon & Elliot, 1998). In particular, identified motivation seems superior for motivating activity that is neither intrinsically nor externally motivating and yet is necessary for successful task performance. Reviewing the literature, Koestner and Losier (2002) concluded that people whose behavior is regulated by identified motivation are likely to engage in behaviors that they believe are critical to the realization of their values, even if such behaviors are not intrinsically motivating, whereas people whose behavior is regulated solely by intrinsic motivation will not engage in behaviors that are unpleasant or uninteresting, even if such behaviors are critical to the realization of their values. Although intrinsic motivation is conducive to creativity, not all aspects of the creative process are intrinsically motivating. Indeed, many eminent creators have described the work of creativity with such terms as “toil,” “painstaking,” “laborious,” “painful effort,” “serious hard work,” “like going to the dentist,” and “Hell on Earth” (Ghiselin, 1952, pp. 117, 118; Plimpton, 1999, pp. 61, 249; Steinkraus, 1985; Webb, 1998, p. 2; Zollo, 2003, p. 332). What motivated these anguished and weary creators to soldier on? In many such cases, it seems to have been their conviction that the endeavor on which they labored was extremely important, valuable. In contrast, people who are guided solely by intrinsic motivation would scarcely sustain a line of activity as bleak or torturous as the creative process is for many who succeed at it. Consider, for example, the brief career of comedic songwriter Tom Lehrer, who wrote “purely for fun” (Zollo, 2003, p. 61), neither regarding his songs as important nor willing to write “as a chore” (p. 65). Predictably, when the going got less fun, Lehrer quit songwriting and returned full-time to his mathematical work, which he had always considered more important, although not necessarily fun.

¹Values are defined as stable beliefs about the relative importance of desirable transsituational goals/ideals, functioning as general principles guiding evaluations, decisions, and behavior and operationalized with participants’ assessments of the importance of various qualities/ideals (Braithwaite & Scott, 1991; Rohan, 2000). Identified motivation has been equated with personal values (Sansone & Smith, 2000) and operationalized with participants’ assessments of the importance, value, or degree of fit with one’s values of various goals, strivings, or other endeavors (e.g., Koestner et al., 2002; Sheldon & Elliot, 1998, 1999; Sheldon & Houser-Marko, 2001).
Second, by influencing one’s evaluations of activities and their expected consequences, one’s value priorities help determine, respectively, one’s level of intrinsic motivation and external motivation for doing activities (Feather, 1995; Homer & Kahle, 1988). How intrinsically motivating is a creativity task (or any other task)? It depends on one’s value priorities. All else being equal, the prospect of doing creativity for creativity’s sake should be more intrinsically motivating for people who more highly value creativity. How externally motivating is the prospect of being paid or recognized for performing creatively (or any other behavior)? This, too, depends on one’s value priorities. For example, the prospect of behaving creatively for the sake of gaining public recognition should be more externally motivating for people who more highly value public recognition of competitive success. (This may explain why narcissistic individuals, who highly value public recognition of competitive success, Kasser & Ryan, 1996, behave more creatively when anticipating public social comparison but not when anticipating private social comparison, Wallace & Baumeister, 2002.)

Third, research on creative writers has produced the counterintuitive finding that “creative inspiration is more likely to follow, than precede, productivity” (Boice, 1983, p. 542), particularly when the antecedent productivity is motivated by one’s own values. For example, those who wrote primarily when intrinsically motivated to write or in response to the external contingencies made salient by approaching deadlines produced fewer creative ideas, wrote fewer pages, completed fewer manuscripts, submitted fewer manuscripts for publication, and reported greater procrastination than did writers who typically began writing before they wanted to and wrote in regular sessions they had scheduled, apparently motivated by an internal sense of the importance of their work (Boice, 1997). The ironic finding that creative ideas strike more often when one begins working without feeling inspired is consistent with the work practices of many successful creators who, chronically lacking intrinsic motivation to get started, must instruct, encourage, or otherwise persuade themselves to begin working on each new project, expecting intrinsic motivation to follow.

The physicist Freeman Dyson, for example, describes getting started as “unadulterated torture” for which he must put “blood, sweat, and tears into it first” and “push and push and push with the hope that something good will come out” before the process becomes intrinsically motivating (Csikszentmihalyi, 1996, p. 117). Similarly, for the accomplished songwriter Jimmy Webb, beginning a song usually requires self-determined extrinsic motivation and only later does the process become intrinsically motivating:

> Sometimes at the beginning it just seems like an impossible task... I sit there [at the piano] and I go, “I don’t want to play a G. And I don’t want to play a B flat.” It all looks unpromising. And I just sit there, and I have to make myself play. I say, “Play. Play one note.” And that way I get myself going, very slowly sometimes. And then the momentum builds and I really get into the joy of it. (Zollo, 2003, p. 165)

Finally, research on self-concordance suggests that the combination of identified and intrinsic motivation may represent an unusually potent mixture for heightening or sustaining the effort that underlies progress toward goal attainment (for a meta-analysis, see Koestner, Lekes, Powers, & Chicoine, 2002). As yet, however, no research has examined whether creativity is among the behaviors that are facilitated by self-concordant motivation.

Previous Research on Values and Creativity

The present study is not the first to examine the relationship between values and creativity. Indeed, values were among the traits studied by the pioneering creativity researchers at Berkeley’s historic Institute of Personality Assessment and Research (IPAR). In their studies of select samples (architects, mathematicians, writers), IPAR researchers found that creativity correlated negatively with the Q-sort item “favors conservative values” and correlated positively with the items “values own independence and autonomy” and “values intellectual and cognitive matters” (Barron, 1968; Helson, 1971; MacKinnon, 1978; also see Helson, Roberts, & Agronick, 1995). The two IPAR studies in which values were measured with

After the IPAR studies, few researchers studied values and creativity. Getzels and Csikszentmihalyi (1976), in their research on students at a highly selective art institute, found that ratings of students’ artistic creativity did not correlate with any of the six Study of Values scales in females and correlated with only one Study of Values scale in males; additionally, none of the Study of Values scales significantly predicted later career success in a sample of students who were followed longitudinally. Shin and Zhou (2003) measured the values of tradition, conformity, and security among employees at Korean R&D companies and reported that such values did not correlate with supervisor ratings of dispositional creativity.²

Although important, previous studies of values and creativity are difficult to interpret because of several important shortcomings that leave a void in the literature. First, researchers did not measure creativity with blind ratings of creators’ original products but instead used measures that rely ultimately on dispositional attributions of creative ability, which are susceptible to various biases (Kasof, 1995). Second, the Study of Values is now understood to be primarily a measure of preference, interest, beliefs, and behavioral intentions, rather than values (Braithwaite & Scott, 1991). Third, because researchers reported only the significant correlations between creativity and Q-sort items (rather than correlations with all 100 Q-sort items), it is difficult to tell whether any particular item’s association with creativity was substantively meaningful or merely a product of chance, particularly because correlations were reported without having been adjusted for the error rate for multiple comparisons. Fourth, researchers generally used small samples (most Ns < 50) that were limited to participants who were extremely intelligent, educated, and creative, thus restricting the range of values and creativity (Getzels & Csikszentmihalyi, 1976). Fifth, although measures of some values may be contaminated by social desirability (Schwartz, Verkasalo, Antonovsky, & Sagiv, 1997), previous researchers assessed values without participant anonymity or controlling for social desirability, which raises the possibility of confounding by socially desirable response bias. Sixth, because previous studies did not search for interaction effects, it is unknown whether the relationship of values to creative behavior is moderated by situational or other dispositional variables. In no previous study, for example, did researchers use true experimentation, which might have helped determine whether the effect of values on creative performance depends on situational variables.

More important, most previous research into the relationship between values and creativity was exploratory and atheoretical. Investigators searched for relationships between creativity and lists of values that were selected for study not on the basis of a priori theoretical argument, but because the values were conveniently available on existing measures of values. Observed associations between values and creativity could be interpreted as making sense, post hoc. Additionally, neither guided by theory nor administering a comprehensive set of values, most previous researchers may have unintentionally failed to measure those values that best predict creative behavior.

Given these shortcomings of previous research on values and creativity, we believe it is now time for a fresh look at the issue, guided by recent theoretical and methodological developments in the study of values. The present study is our attempt to use up-to-date theoretical and methodological approaches to (a) develop a theoretical explanation that relates values to creative behavior and (b) test this theoretical argument in a manner that overcomes the above methodological flaws in previous research.

Values Hypothesized to Promote or Prevent Creative Behavior

Thus far in our discussion of identified motivation, we have cited theory and evidence suggesting

²In studies investigating associations between values and variables conceptually similar to creativity, the “values” facet of Openness to Experience correlated positively with divergent thinking (McCrae, 1987) and values were not consistently related to assessments of product quality and originality on vocational tasks (Mumford et al., 2002).
that, in general, identified motivation promotes behaviors. But identified motivation, per se, does not promote behavior in general. Rather, identified motivation toward specific values energizes the pursuit of outcomes that express those specific values rather than outcomes that are irrelevant to the specific values. Moreover, in effect, identified motivation toward specific values steers one away from pursuing outcomes that are incompatible with these specific values. Thus, just as religious activity is promoted by the values that religion expresses, unaffected by values irrelevant to religion, and inhibited by values inconsonant with it (Saroglou, Delpierre, & Dernelle, 2004), so, too, creative behavior should be promoted by values that creativity expresses, unaffected by values irrelevant to creativity, and prevented by values antagonistic to creativity.

The values that creative behavior expresses are those that represent the essential properties or attributes that define creativity and those that distinguish creative from uncreative behavior. Which properties or attributes are these? The most distinctive and necessary property of all things creative is, of course, that they exhibit creativity, which is defined in part by a high level of originality and the use of imagination (Amabile, 1996). Thus, at the most general level, creative behavior expresses such values as creativity, originality, uniqueness, and imagination. Additionally, because highly original ideas are necessarily very different from previous ideas, creative behavior necessarily represents novelty, change, variation/difference. Thus, creative behavior expresses such values as novelty, change, and variety/difference, and may also be favored by value of broad-mindedness/tolerance, which may permit individuals to accept highly novel ideas (including their own) without valuing novelty or change per se. Moreover, because being creative often requires risk-taking (Sternberg & Lubart, 1995), creative behavior expresses the values of risk, daring/courage, and perhaps adventure. Additionally, creative behavior is encouraged by attributes that are expressed in the values of independence, autonomy, and curiosity (Feist, 1998; Ochse, 1990). Finally, although creative behavior in any domain expresses these values, creative behavior in particular domains may be additionally distinguished by, and thus may express values of, domain-specific qualities (e.g., artistic beauty, entrepreneurship, inventiveness). Thus, value of artistic beauty is expressed more by artistic creativity than by entrepreneurial creativity.

Values that are antagonistic to creativity are those that represent the negation or opposite of the essential properties that define creativity and those that distinguish uncreative from creative behavior. Since creative behavior is, by definition, highly original, any behavior that is necessarily unoriginal is necessarily uncreative. Thus, valuing conformity, tradition, custom/convention, obedience, and adhering to norms should generally oppose creativity, as should valuing specific types of norms (e.g., formality, etiquette, ritual, protocol). Additionally, because creativity represents novelty, change, and variation/difference, the values of stability, tradition, ancestry, orthodoxy, routine, accepting the status quo, and uniformity should conflict with creativity. Finally, because creativity often requires risk-taking, such values as safety, caution, security, and prudence should oppose creativity.

### Comprehensive Pattern of Relations Between Values and Creative Behavior

Thus far, we have argued that creative behavior is promoted by certain specific values and is discouraged by other specific values. We now extend this argument by situating it within a larger theoretical context and proposing that creative behavior is related holistically to the entire integrative-dynamic pattern of value types identified by Schwartz (1994). In Schwartz's taxonomy, more than 50 single values are classified into 10 distinct value types, defined in terms of their motivational functions, as detailed in Table 1. For example, the single value creativity joins several other single values (freedom, independent, choosing own goals, curious) in forming a higher-order value type labeled Self-Direction, which theoretically serves the motivational function of autonomous thought and behavior. Likewise, single values such as respect for tradition and devout comprise a higher-order value type labeled Tradition, which theoretically serves the function of maintaining
established customs, ideas, and conventions received from cultural traditions. As shown in Table 1, the single values that we argued should promote creative behavior lie predominately in the Self-Direction value type, and to a lesser extent in the Stimulation and Universalism value types, while the values that we argued should inhibit creative behavior lie predominately in the Tradition value type and, to a somewhat lesser extent, in the Conformity and Security value types. Therefore, we hypothesize that creative behavior is promoted primarily by the Self-Direction value type and to a somewhat lesser extent by the Stimulation and Universalism value types, and is inhibited primarily by the Tradition value type and, to a somewhat lesser extent, by the Conformity and Security value types.

Schwartz (1994) further argued that value types differ in their degree of compatibility with other value types. According to Schwartz, the total pattern of (in)compatibilities among value types forms an approximately circular structure (see Figure 1). At any point around the circle, the distance between any two value types represents the degree of (in)compatibility between their motivational functions. Thus, value types that are adjacent (e.g., Self-Direction with Stimulation and Universalism, Tradition with Conformity and Security) are most positively related to each other, whereas value types located opposite one another (e.g., Self-Direction/Stimulation vs. Tradition/Conformity) are least positively related to each other. (The Tradition value type is located more peripherally than is the Conformity value type, as represented in Figure 1 by the location of Tradition farther from the circle’s center.) This model of the structure of human values has been supported in analyses of thousands of participants in various cultural groups (Schwartz & Boehnke, 2004).³

³Schwartz additionally argued that the ten value types are organized around two higher-order bipolar dimensions. The first dimension, which involves the opposition between motivational forces that effect change versus those that effect stability, contains the Self-Direction and Stimulation value types at its Openness to Change pole and the Tradition, Conformity, and Security value types at its Conservation pole. The second dimension, which involves the opposition between motivational forces that serve self-interest versus those that transcend self-interest, contains the Achievement and Power value types at its Self-Enhancement pole and the Universalism and Benevolence value types at its Self-Transcendence pole. (The Hedonism value type is related to both the Openness to Change and Self-Enhancement poles.)

Table 1. Schwartz Value Types, Their Definitions, and the Single Values That Comprise Them

<table>
<thead>
<tr>
<th>Value Type</th>
<th>Definition</th>
<th>Single Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hedonism</td>
<td>Pleasure and sensual gratification for self</td>
<td>Enjoying life; pleasure</td>
</tr>
<tr>
<td>Stimulation</td>
<td>Excitement, novelty, challenge</td>
<td>Varied life; exciting life; daring</td>
</tr>
<tr>
<td>Self-Direction</td>
<td>Independent thought and action</td>
<td>Choosing own goals; creativity; curious; freedom; independent (Self-respect)</td>
</tr>
<tr>
<td>Universalism</td>
<td>Understanding, appreciation, tolerance, and protection of welfare of humanity and nature</td>
<td>Broadminded; equality; protecting the environment; social justice; unity with nature; wisdom; world at peace; world of beauty</td>
</tr>
<tr>
<td>Benevolence</td>
<td>Preservation and enhancement of the welfare of people with whom one is in frequent contact</td>
<td>Forgiving; helpful; honest; loyal; responsible (Mature love; true friendship)</td>
</tr>
<tr>
<td>Conformity</td>
<td>Restraint of impulses likely to harm or upset others or to violate social norms</td>
<td>Honoring parents and elders; obedient; politeness; self-discipline</td>
</tr>
<tr>
<td>Tradition</td>
<td>Respect; acceptance, and commitment to established customs and ideas received from cultural traditions</td>
<td>Accepting my portion in life; devout; humble; moderate; respect for tradition</td>
</tr>
<tr>
<td>Security</td>
<td>Stability, safety, and harmony of self, relationships, and society</td>
<td>Clean; family security; national security; reciprocation of favors; social order (Healthy; sense of belonging)</td>
</tr>
<tr>
<td>Power</td>
<td>Social status and prestige, control or dominance over people and resources</td>
<td>Authority; social power; wealth (Preserving my public image; social recognition)</td>
</tr>
<tr>
<td>Achievement</td>
<td>Personal success through demonstrating excellence according to social standards</td>
<td>Ambitious; capable; influential; successful (Intelligent; self-respect)</td>
</tr>
</tbody>
</table>

Note. Value types are defined by their motivational functions. Single values are values that are used in computing value types in either within-culture or cross-culture studies; parentheses contain values that are used in computing value types only in within-culture studies.
How is the circular structure related to behavior, such as creative behavior? Schwartz (1996) argued that behaviors which express or oppose values should be associated more similarly with value types that are located closer to each other and that associations between an external variable and value types should “decrease monotonically as one moves around the circular structure of value types in both directions from the most positively associated value type to the least positively associated value type” (p. 6). This implies that the associations between value types and behaviors should approximate a wavelike sinusoidal pattern when the associations are plotted graphically with value types arrayed along the x-axis in the same sequence in which they are ordered in the circular structure. Thus, when predicting the entire pattern of associations with a behavior, even non-significant associations provide meaningful information. The predicted wavelike pattern has been confirmed in studies of electoral, religious, and intergroup behaviors (Saroglou et al., 2004; Schwartz, 1996).

Earlier, we hypothesized that creative behavior is promoted primarily by the Self-Direction value type and secondarily by the adjacent value types of Conformity and Security. These hypotheses can now be integrated into a single comprehensive pattern of relations with all 10 value types. The circular structure of value types implies that correlations between creative behavior and the importance assigned to value types should decrease monotonically in both directions as one moves away from Self-Direction (most positive) towards Tradition (most negative). Thus the total pattern of correlations between creative behavior and value types should approximate a wavelike sinusoidal pattern that peaks at the correlation between creative behavior and Self-Direction and reaches its nadir at the correlation between creative behavior and Tradition, as represented in Figure 2. Formulating the full set of hypotheses as a single integrated hypothesis, we predict the following order of correlations, ranked from highest to lowest: Self-Direction (10); Stimulation and Universalism (tied at 8.5); Hedonism, Benevolence, Achievement, Power (tied at 5.5); Conformity and Security (tied at 2.5); and Tradition (1).

Although this hypothesized pattern of associations between creative behavior and value types was never before tested with creative behavior, it is consistent with Feather’s (1995) findings concerning attitudes and choices related to creativity. After completing the Schwartz Value Survey, undergraduates responded to hypothetical

![Figure 1. Theoretical structure of value. Reprinted with permission from Sagiv and Schwartz (1995).](image1)

![Figure 2. Theoretical model of correlations of creative performance with importance assigned to value types. Note. HE = Hedonism; ST = Stimulation; SD = Self-Direction; UN = Universalism; BE = Benevolence; CO = Conformity; TR = Tradition; SE = Security; PO = Power; AC = Achievement.](image2)
scenarios which presented various value conflicts. In two scenarios, creativity and other Self-Direction values were pitted against Conservation values. In one scenario, for example, students were asked to choose between two imaginary jobs: one offering little security but much creativity, freedom, and independence versus another job offering much security but little creativity, freedom, or independence. When collapsed across both scenarios, students’ attraction to and selection of the options that offered Self-Direction generally correlated most positively with the importance they placed on Self-Direction, followed by the importance they placed on Universalism, and correlated most negatively with the importance they placed on Security, Conformity, Tradition, and Power, with very small correlations observed for other value types.

For exploratory purposes, we also examined whether the relationship between value types and creative behavior depends on the explicitness of testing instructions. In many creativity studies, participants are explicitly asked to perform creatively in what they are told is a study of creativity. In other creativity studies, the experimenter’s purpose is concealed; participants are not encouraged to be creative or even led to construe the tasks as measures of creativity. Relative to standard instructions, explicit creativity instructions have been found to increase the strength of correlations between traits and creative behavior (e.g., Chen, Kasof, Himsel, Dmitrieva, Dong, & Xue, 2005; Harrington, 1975; Katz & Poag, 1979) and stimulate creativity more strongly in individuals who are more creative in their occupations (Datta, 1963). Given these findings, we speculated that explicit creativity instructions might strengthen the relationship between values and creative behavior. Earlier we noted that although intrinsic motivation facilitates creative behavior, not all aspects of the creative process are necessarily intrinsically motivating. Almost inevitably, at least some stretch of the journey leading to creativity is so unappealing or aversive that extrinsic motivation is necessary to energize forward movement. In general, therefore, the task of making a creative product requires both intrinsic and extrinsic motivation: Because each type of motivation is necessary but insufficient, creative products should not result if either type of motivation is absent. The synergistic interaction between intrinsic and extrinsic motivation should influence creative behavior above and beyond the main effects of each type of motivation.

Although past research on intrinsic motivation and creativity generally focused on temporary situationally induced motivational states, recent research has documented stable individual differences in the degree to which motivation is influenced by how intrinsically rewarding an activity is (Amabile, Hill, Hennessey, & Tighe, 1994). Individuals low in intrinsic motivational orientation (IMO) are less motivated by whether they find an activity intrinsically rewarding than are individuals high in IMO. Consistent with research on state intrinsic motivation, the trait of IMO correlates positively with creative behavior (Amabile et al., 1994; Kaufman, 2002). For the present study, we hypothesized that the interaction term representing the product of IMO and the Self-Direction value type should promote creative behavior above and beyond the main effects of IMO and Self-Direction.

Motivational Synergy in the Effects of Values on Creative Behavior

The making of a creative product may be considered a multiplicative task, because it generally consists of multiple subtasks that are each necessary but insufficient for successful creativity (Loehle, 1994; Simonton, 2000; Sternberg & Lubart, 1995). If performance on even one critical subtask is insufficient, a creative end product will not result. Because most creativity tasks are multiplicative, the causal requirements necessary for creativity interact synergistically.

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This hypothesis bears resemblance to Amabile’s (1993, 1997) motivational synergy hypothesis. Using the widely accepted definition of creative behavior as behavior that is both novel and appropriate, Amabile proposed that novelty is promoted by intrinsic motivation, whereas appropriateness is promoted by “informational or enabling extrinsic motivation” (defined as motivation for contingent external rewards that provide competence feedback without undermining autonomy or that enable deeper or more exciting task involvement). That is, a positive effect of intrinsic motivation on creativity should be mediated by novelty (especially in stages of the creative process which require novelty more than appropriateness), whereas a positive effect of informational/enabling extrinsic motivation on creativity should be mediated by appropriateness (especially in stages which require appropriateness more than novelty). Despite the similarities between our hypothesis and Amabile’s, the two arguments differ in important ways. In the interest of conserving space, we note only two differences that are most germane to the present study. First, Amabile’s hypothesis yields no predictions regarding values because her definition of informational/enabling extrinsic motivation corresponds only to external motivation and does not encompass identified motivation. In contrast, our use of Deci and Ryan’s (1991) broader conception of extrinsic motivation allows us to predict Intrinsic × Extrinsic interaction effects based on combining intrinsic motivation with any type of extrinsic motivation, including identified motivation. (Theoretically, creative behavior should be better predicted by Intrinsic × Identified synergy than by Amabile’s Intrinsic × External synergy, because values are, by definition, more internal, stable, and global than are external rewards and because values influence the attractiveness of external rewards more so than vice versa.) Second, whereas we hypothesized a multiplicative interaction, Amabile explicitly hypothesized that informational/enabling extrinsic motivation should “add” to intrinsic motivation (Amabile, 1997, p. 22) and described her prediction of motivational synergy as “an additive effect of intrinsic and extrinsic motivation” (Amabile, 1996, p. 174).

**Method**

**Participants**

Participants were 248 undergraduate students (75% females) who participated for extra credit in social science courses at the University of California, Irvine. All students eligible for participation were given the option of receiving the same amount of extra credit by doing an alternative activity (no one took this option) and were informed that they could quit at any time without losing extra credit. Course credit was contingent on whether the student participated, rather than on the quality, creativity, or duration of their performance. The mean age was 22.1 years (SD = 4.34). The sample was ethnically diverse: 30% European-Americans, 39% Asian-Americans/Pacific Islanders, 16% Hispanic-Americans, 2% African-Americans, and 14% other, including multiethnic/unreported. (Due to time constraints, not all tasks could be given to each participant, resulting in uneven numbers of participants for some tasks.)

**Measures of Value Priorities, IMO, and Response Bias**

**Value priorities.** Participants completed the Schwartz Value Survey (Schwartz, 1994), which lists 57 values, each followed by a brief parenthetical elaboration. Participants rate the importance of each value as a guiding principle in their lives using a 9-point scale ranging from −1 (opposed to my values), through 0 (not important), 3 (important), and 6 (very important), to 7 (of supreme importance). Scores for each value type were calculated by averaging the importance ratings for the specific values that comprise each value type (see Table 1). For all analyses of value types, we followed Schwartz’s recommendation to partial out participants’ mean scores on the entire Schwartz Value Survey to correct for partial differences in response bias; scores were also standardized within participants.

**IMO.** One-hundred sixty-four participants also completed the 15-item Intrinsic Motivation
scale of the Work Preference Inventory, Student Version (Amabile et al., 1994). Sample items include “I enjoy trying to solve complex problems” and “What matters most to me is enjoying what I do.” Participants responded on a 7-point Likert scale, ranging from –3 (strongly disagree) to +3 (strongly agree). Cronbach’s alpha was .70.

Social desirability response bias. Because the Schwartz (1994) Value Survey and the Work Preference Inventory have been associated with the Crowne-Marlowe Scale (Amabile et al., 1994; Schwartz et al., 1997), which purportedly measures social desirability response bias, we measured this bias for possible use as a covariate. We used the 20-item Impression Management Scale (Paulhus, 1991) rather than the Crowne-Marlowe Scale because the latter actually measures approval motivation rather than response bias (Paulhus). Participants responded on a 7-point scale, ranging from 1 (not true) to 7 (very true). After adjusting the 10 reversed items, responses of < 6 were converted to 0, and responses of > 5 were converted to 1. Cronbach’s alpha was .74 in this study.

Creativity Measures

Participants created original products in the verbal, artistic, and mathematical domains, and these products were subsequently assessed for level of creativity.

Verbal creativity. Each participant was asked to create two poems, one story, and two titles. For the poetry task, which was adapted from Amabile (1996), participants were asked to write poems in which line 1 consisted of one noun, line 2 consisted of two adjectives, line 3 consisted of three verbs, lines 4 and 5 could have any number of words of any grammatical type, and line 6 repeated the noun in line 1. As in previous research by other investigators (e.g., Amabile, 1985; Cheek & Stahl, 1986; Ruscio, Whitney, & Amabile, 1998), participants were assigned the first line of each poem. Within each instructional condition, participants were randomly assigned either two commonplace titles (hope, sunshine) or two unusual titles (ear, window); the order of presentation of titles was counterbalanced. Participants were informed that they had 6 min to write each poem.

For the story task, participants were given 15 min to write a story with the title “Beyond the Edge” (from Sternberg & Lubart, 1995).

For the title task, participants were asked to create titles for two art photographs. Participants who were assigned commonplace titles for the poetry tasks were asked to create titles for two photographs that featured commonplace photographic subject matter (realistic landscapes; DeCook, 1972, pp. 43, 48), whereas participants who had received unusual poetry titles were asked to create titles for two photographs that featured unusual imagery (surrealistic photomontages; Uelsmann, 1992, pp. 65, 111). Photographs were presented in counterbalanced order. Participants were told that they had 3 min to title each photograph.

Artistic creativity. For the measurement of artistic creativity, we developed two types of task, each requiring only minimal technical skill. The drawing task was adapted from tasks used in many previous creativity studies (e.g., Chen, Kasof, Himself, Greenberger, Dong, & Xue, 2002; Getzels & Cskszentmihalyi, 1976; Sobel & Rothenberg, 1980; Sternberg & Lubart, 1995). Participants were given 10 min to create eight small drawings with the following titles (four geometric shapes and four nongeometric titles): circle, rectangle, triangle, oval, contrast, person, motion, and dream. Despite these time limits and the simplicity of some of these titles, participants’ drawings varied across a broad range of creativity. To the titles “circle” and “triangle,” for example, although many participants drew the shapes in a simple, straightforward, or typical manner, other participants created drawings that displayed alternative, nongeometric interpretations (e.g., a circle of friends, a relationship triangle), demonstrated unusual perspectives on the shapes (e.g., a circular logo or emblem, triangularly shaped mountain peaks embedded within triangularly shaped mountains), or showed the geometric shapes in concrete contexts (e.g., triangles in Egyptian pyramids, triangular elements in a depiction of unequal scales of justice). (For a more detailed description and several examples, see Chen et al., 2002.) For the
design task, participants were told they had 8 min to design a chair by using two triangles, two ovals, two rectangles, and three lines (participants were allowed to use just eight of the nine components if they so desired) of any size or length. This task was designed for the present study.

Mathematical creativity. To assess mathematical creativity, two types of task were adapted from Haylock’s (1987) measures of originality and flexibility in solutions to ambiguous mathematical problems. On each task, participants received guidelines that defined appropriateness and then were asked to generate multiple appropriate responses, which varied widely in originality. For the cutting rectangles task, participants were asked to partition rectangles by drawing straight lines. Participants had 6 min to work on four rectangles, of which two were to be segmented into four component rectangles and two were to be segmented into nine component rectangles. On the nine-dot areas task, participants were asked to partition a 2" by 2" space (demarcated by nine dots) into segments of 2 square inches by drawing straight lines and connecting dots. Participants had 6 min to work on three such tasks.

Judgment and Coding of Creativity

Three methods were used to assess product creativity. Prior to assessment, we removed each product from its test packet, typed each verbal creation, and grouped products together with other participants’ products of the same type. Judges and coders were trained undergraduate research assistants. Undergraduate students have been found to provide reliable and valid judgments of creative products (Amabile, 1996, pp. 72–73; see also Sternberg & Lubart, 1995). For example, Amabile (1983) concluded that

The level of expertise of the judges appears not to matter as much as might have been expected for these tasks. In the studies on artistic creativity, there is no clear superiority of artists over nonartists in average interjudge correlations. Moreover, it does not appear that nonartists or artists were subjectively defining creativity in very different ways. (p. 57)

Different sets of judges were used for tests in the different domains or subdomains (i.e., geometric drawings, nongeometric drawings, chair design, story writing, poem and title writing, and mathematical creativity).

Consensual assessment technique. Poems, drawings, and stories were judged following Amabile’s (1996) consensual assessment technique. Although we gathered ratings on multiple dimensions (e.g., creativity, liking, technical quality), the present study focuses only on the creativity dimension. Judges were instructed to employ their own subjective understanding of creativity, rate each product relative to the others, and use the entire 5-point rating scale, ranging from 1 (not at all creative) to 5 (highly creative). Products were arranged into a different random order before they were rated by judges. The number of judges ranged from 6 to 8 per task. Cronbach’s alphas averaged .89, ranging from .72 to .97.

Sorting. For the title and design tasks, we developed a sorting method to assess creativity. For each task, judges were asked first to randomly shuffle products, then to sort products into three approximately equal piles representing low, medium, and high creativity, and finally to subdivide the low-and high-creativity piles each into two smaller piles; thus products were eventually sorted into five levels that approximated a normal distribution. Titles were sorted by 10–11 judges, and designs were sorted by three judges. Interjudge reliability coefficients ranged from .75 to .88 and averaged .82.

Coding. To assess mathematical creativity, simple objective coding schemes were developed based on Haylock (1987). Undergraduate research assistants were trained to use these schemes in coding products. For the cutting rectangles task, products that featured only vertical or only horizontal lines were coded as low creativity; products that featured vertical and horizontal lines of different lengths (resulting in rectangles of varying size) were coded as medium creativity; and products that featured more complex configurations (e.g., three-dimensional or imbedded rectangles) were coded as high creativity. For the nine-dots area
task, creativity was coded according to how small of a unit participants used to generate the 2-square-inch segments, assigning higher creativity to products that featured smaller units. For example, products that featured large segments (e.g., half the size of the 4-square-inch space) were coded as low in creativity, whereas products that featured the smallest possible unit (1/16 of the larger space created by drawing straight lines across all nine dots) were coded as most highly creative. Products were coded independently by two coders, yielding an initial agreement rate of > 85%. Intercoder disagreements were examined and resolved during meetings with the authors.

Procedure

After providing informed consent, participants completed questionnaires that measured value priorities, IMO, and socially desirable responding, as well as other variables to be used in a separate study. Participants were then randomly assigned to work on tasks either with or without explicit creativity instructions. In the explicit instruction condition, tasks were labeled as creativity tasks and participants were explicitly encouraged to be creative. In the standard instruction condition, tasks were instead presented with plausible, somewhat vague labels without any mention or encouragement of creativity. For example, the drawing task in the explicit instruction condition was titled “Drawing Creatively” and participants were instructed to “create drawings that are highly creative,” which was defined as “drawings that are both original (novel, uncommon) and also appropriate (artistically effective).” In the standard instruction condition, this task was titled “Visual Imagery” and participants were instructed to make drawings “appropriate to each particular title” and “intuitively or subjectively appealing or ‘right’ for you.” (For more details about the instructional conditions and their effects, see Chen et al., 2005.)

Results

Data for male and female participants were combined in all analyses because no meaningful sex differences were predicted or found. Because we had predicted the direction of differences, one-tailed tests of significance were used.

Preliminary Analyses

Creative performance. Despite the diversity of our creativity measures, analyses of individual differences in creative performance supported a single domain-general factor of overall creativity. In Chen, Himsel, Kasof, Greenberger, and Dmitrieva’s (2006) analyses of the 158 participants who received each of the creativity tasks, principal component factor analyses with varimax rotations accounted for nearly 60% of the variance in each instructional condition and revealed three factors that correspond to the three domains of verbal, artistic, and mathematical creativity. When the three domain summary scores were factor analyzed, a single factor was extracted, accounting for 45% and 52% of the variance in the standard and explicit instruction conditions, respectively. Loadings were .79 and .70 for the verbal domain, .74 and .81 for the artistic domain, and .41 and .65 for the mathematical domain in standard and explicit instruction conditions, respectively. Reliability analyses, in which each task was treated as an individual item (with the eight drawings treated as separate items), yielded Cronbach’s alphas of .83 overall, .73 for the standard instruction condition, and .82 for the explicit instruction condition. (For further details of these analyses, see Chen et al., 2006.)

Because these results provided evidence for individual differences in creative performance as a single domain-general component, we calculated a single conglomerate index of each participant’s overall creative performance. After standardizing scores within each task, we averaged each participant’s scores on each type of task, then averaged these means within the three domains (assigning equal weight to each type of task within domains). Finally, the overall creativity index was created by averaging each participant’s mean scores across the three domains, assigning equal weight to each domain.

Social desirability. The Impression Management scale did not correlate significantly with creative performance, IMO, or any value type
except Power ($r = -0.28, p < .0001$) and Benevolence ($r = 0.24, p = 0.002$). Therefore, we did not control for Impression Management in subsequent analyses.

**Instructional condition.** The predicted correlations between creative performance and the importance assigned by participants to value types did not differ significantly between the two instructional conditions, and the general pattern of correlations was similar in both conditions. Hence, for all subsequent analyses, we standardized creative performance within each condition, collapsed across the two conditions, and utilized the entire sample in correlating value types with creative performance.

**Central Analyses**

As predicted, creative performance correlated positively with the importance assigned by participants to the Self-Direction value type, $r = 0.21$, $p < .0005$, as well as the adjacent value types of Stimulation, $r = 0.14$, $p < .05$, and Universalism, $r = 0.22$, $p < .0005$, and correlated negatively with the importance assigned to the Tradition value type, $r = -0.22$, $p < .0005$, as well as the adjacent value types of Conformity, $r = -0.18$, $p < .003$, and Security, $r = -0.19$, $p = 0.002$.

To test the hypothesis that creative behavior is related holistically to the entire set of value types in the sinusoidal pattern, we correlated creative performance with the importance assigned by participants for all 10 value types (see Figure 3). The overall pattern of correlations approximated the order specified by the integrated hypothesis for the whole set of value types, as described by the sinusoidal curve (cf. Figure 2). Beginning with the nadir at Tradition, the correlations increased monotonically at each step as one moves successively in either direction until reaching the zenith, which was shared by Self-Direction and Universalism. In addition to the significant positive correlations with Self-Direction, Universalism, and Stimulation, and the significant negative correlations with Tradition, Conformity, and Security, the correlations with Power, Achievement, Hedonism, and Benevolence were each nonsignificant, as our integrated hypothesis predicted. Most important, the predicted order of correlations was highly related to the observed correlations, $r = 0.93$, (Spearman) $r_s = 0.96$, both $p s < .0001$. Thus, the results supported the integrated hypothesis specifying the relations between value priorities and creative performance.

Finally, to test the hypothesis that creative performance is promoted synergistically by the interaction between Self-Direction and IMO, we conducted a hierarchical regression analysis in which creative performance was predicted from Self-Direction, IMO, and the Self-Direction $\times$ IMO interaction. Self-Direction and IMO were standardized and entered into the regression equation at step 1. The product of the standardized Self-Direction and IMO was entered in to the regression in step 2. As shown in Table 2,

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>B</th>
<th>SE B</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: $R^2 = 0.14$, $F(2, 161) = 13.13^{***}$</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Intrinsinc orientation (IMO)</td>
<td>.13*</td>
<td>.06</td>
<td>.17</td>
</tr>
<tr>
<td>Self-Direction</td>
<td>.22***</td>
<td>.06</td>
<td>.28</td>
</tr>
<tr>
<td>Step 2: $R^2 = 0.16$, $\Delta R^2 = 0.02$, $F(3, 160) = 9.84^{***}$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMO</td>
<td>.13*</td>
<td>.06</td>
<td>.17</td>
</tr>
<tr>
<td>Self-Direction</td>
<td>.22***</td>
<td>.06</td>
<td>.28</td>
</tr>
<tr>
<td>IMO $\times$ Self-Direction</td>
<td>.11*</td>
<td>.06</td>
<td>.13</td>
</tr>
</tbody>
</table>

* $p < .05$.
** $p < .01$.
*** $p < .001$, one-tailed.
Self-Direction and IMO accounted for 14% of the variance in creative performance. As predicted, the Self-Direction × IMO interaction term added a unique contribution to the prediction of creative performance above and beyond the significant main effects of Self-Direction and IMO, $\Delta R^2 = .02$.

Discussion

The results of this study have important implications for the issue of whether creative behavior is prevented or promoted by extrinsic motivation. As noted earlier, previous work on this issue was limited to only the least autonomous type of extrinsic motivation, external motivation, which is based on external contingencies of reward or punishment. In focusing solely on external motivation, previous creativity researchers overlooked other types of extrinsic motivation. In the present study, we addressed this gap in the literature by focusing on identified motivation, the only type of extrinsic motivation that is fully autonomous (Deci & Ryan, 1991). We demonstrated that identified motivation, which derives from the individual’s values, can both facilitate and inhibit creative behavior, depending on the particular pattern of values the individual regards as most important. Specifically, we found that creative behavior was promoted primarily by the Self-Direction value type and secondarily by the Stimulation and Universalism value types, and that creative behavior was discouraged primarily by the Tradition value type and secondarily by the Conformity and Security value types. As hypothesized, the pattern of correlations between creative behavior and value types approximated a sinusoidal curve that peaked at the correlation between creative behavior and Self-Direction and decreased monotonically in both directions toward its lowest point at the correlation between creative behavior and Tradition. Also as hypothesized, creative performance was promoted synergistically by the interaction between Self-Direction values and intrinsic motivational orientation.

Our study featured several important methodological improvements upon previous studies of values and creativity. Compared with most earlier research, our measure of value priorities had greater validity and encompassed a more comprehensive set of values. Our measures of creativity involved blind assessments of original products, which included a larger and more diverse range of tasks and encompassed more domains of creativity. Additionally, our sample was larger and more representative than in previous studies. Further, to counter social desirability response bias, we provided anonymity to our research participants and we measured the trait form of this response bias for possible use as a covariate.

Although our study is distinguished by these strengths, it has several limitations that should be noted. First, our correlational findings do not permit definitive conclusions about causality: Correlations between values and creative behavior may result from values influencing creative behavior, from creative behavior influencing values, or from spurious correlations with unmeasured variables. However, the possibility that participants’ creative performance in our study influenced their values ratings does not provide a plausible explanation of the present results, for several reasons: (a) Participants created original products after they had already indicated their value priorities; (b) correlations of creative performance with value types (and with the single value creativity) were not higher in the explicit than the standard instruction condition; (c) our trait measure of value priorities differs substantially from the state measure of perceived importance that is sensitive to participants’ perception of their creative performance (Sedikides, Campbell, Reeder, & Elliot, 1998); and (d) previous research has established that value priorities influence behavior more strongly than behavior influences value priorities (Thogersen & Olander, 2002). In future research, causal direction could be experimentally controlled by measuring creative behavior after inducing states of heightened importance for creativity versus other values (Bettman & Sujan, 1987).

Second, because we assessed creative performance only on individual tasks, in limited domains, and on certain types of task within these domains, it remains to be established whether our findings generalize to group tasks (e.g., collaboration, brainstorming groups), other domains (e.g., music,
dance, invention), and other types of task within the domains we tested (e.g., photography and painting within the domain of art).

Third, our use of imposed rather than self-selected creativity tasks/situations may have artificially weakened the effect of value priorities on creative behavior. In general, for traits that motivate the preferential selection of situations conducive to trait-expressive behavior, traits predict trait-expressive behavior less strongly in externally imposed situations than self-selected situations (Emmons & Diener, 1986; Feather, 1995; Snyder, 1983). Creativity-relevant values appear to motivate selection of situations conducive to creative behavior (e.g., careers, academic majors, specializations; Knafo & Sagiv, 2004; Sagiv, 2002; Scott, 1965; also see Getzels & Csikszentmihalyi, 1976, p. 50). Thus, the impact of creativity-relevant values on creative behavior should be stronger in the “real world” than in imposed experiments, including ours. We assigned all research participants, regardless of their value priorities, to work on tasks that allowed, even encouraged, creative behavior. Presumably this caused many of our research participants to behave more creatively than they typically do in the self-chosen, naturally occurring situations of their everyday lives. Moreover, such an artificial increase in creative behavior should have been greatest for those participants whose value priorities least favored the selection of situations conducive to creative behavior. Future research should examine the relationship of value priorities to creative behavior in naturalistic settings.

Fourth, the effect of values on situational selection raises the possibility that some values actually are related curvilinearly to creative behavior in real world situations because extreme levels of valuation may both increase motivation and decrease situational ability. For example, intense rejection of Tradition, Security, and Conformity values may increase an individual’s motivation to create highly original works of art, but ultimately may undermine the individual’s ability to do so, by jeopardizing the material, institutional, and social foundations that are usually needed to sustain an artistic career (Getzels & Csikszentmihalyi, 1976, pp. 186–195). Similarly, prioritizing Self-Direction values far above all else may increase an aspiring scientist’s motivation to do highly original work, but if it leads to excessive rejection of the field’s norms, conventions, and traditions, the aspiring scientist may face major difficulties in securing a foothold in the social institutions of science that ordinarily afford the ability to do creative work (Kasof, 1995). The possibility that values and creative behavior are related in this manner is beyond the scope of the present study.

Fifth, the sample used in the present study only included university students. If the present results generalize to individuals who are less highly educated, then values should be related to creative behavior more strongly in a more representative sample because college students generally place higher priority on the value types that facilitated creative behavior and lower priority on those that inhibited creative behavior (Kohn, 1977; Rokeach, 1973).

Finally, because our study focused exclusively on “small c” creativity and noneminent creators, it remains to be seen whether our findings generalize to historically significant (“Big C”) creativity and to eminent creators. Possible avenues for historiometric research would be to investigate whether variation in value priorities, across both individuals and time, predict variation in particular forms of creativity, as well as in levels of originality and creative productivity, and to investigate complex interactions among various value types.

Because creativity is so vitally important for the progress of human culture, the implications of the present study may be rather disturbing when one considers the low priority that is assigned to creativity in contemporary American culture. Consider, for example, the single value creativity, which in the present study correlated with creative behavior more positively than any other single value. Although valued highly by the small percentage of Americans who are artists, writers, scientists, or holders of advanced degrees, creativity is much less valued by most Americans (Rokeach, 1973). Indeed, when a value survey was administered to large representative samples of American adults in 1968 and 1971, creativity was last-ranked among the survey’s 36 values (Rokeach, 1974). Similarly, in 1990, when a representative national sample was asked which of 11 values they considered especially important to

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encourage in children, creativity came in last place (Inglehart, Basanez, & Moreno, 1998). Moreover, although creativity is valued more highly by college students than by most others, it is a low priority even among college students. Each year, more than 250,000 entering freshmen at U.S. colleges are asked to rate the importance of 20 life aspirations, including four that represent creativity (e.g., writing original works, creating artistic work, making a theoretical contribution to science). When the 20 aspirations were ranked in terms of the percentage of freshmen who considered them very important or essential, the four creativity aspirations emerged as the four lowest-ranked items in 8 of the past 10 years (Pryor, Hurtado, Saenz, Londholm, Korn, & Mahoney, 2006). Judging from these results, it would appear that the single value most highly promotive of advances in art, technology, medicine, architecture, music, literature, and all other domains of culture is also the value that is held in lowest regard in contemporary American society.

Those who do place high value on creativity may take some comfort in the final point we wish to make. Although personal value systems are relatively stable dispositions, research has demonstrated that at least some value priorities can be deliberately altered by various methods (e.g., Ball-Rokeach, Rokeach, & Grube, 1984; Schwartz & Inbar-Saban, 1988). As yet, however, no research has been conducted to determine what methods, if any, can alter the values which, in the present study, were related to creative behavior. We hope that future research will address this important question.

References


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