
Creativity and Self-Determination in Personality

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ABSTRACT: Four measures of self-determination (SD) were correlated with two measures of trait creativity. In Study 1, subjects high on the Creative Personality Scale (Gough, 1979) and the Problem-Solving/Creativity scale (Marsh & O'Neill, 1984) were found to strive for self-determined reasons, to strive toward greater SD, and to evidence higher SD in measures of both motivational orientation and self-concept. Study 2 replicated most of these findings and also showed that creative subjects perceived their parents to be more autonomy supportive. Results are interpreted in terms of a general disposition to be self-determining that may help attune creative people to deeper cognitive resources and capacities within themselves.

A long tradition of empirical research has established that personal autonomy is a core characteristic of the creative personality (Baron & Harrington, 1981; Mumford & Gustafson, 1988; Stein, 1974; Wink, 1991). That is, original people demonstrate a general trait of self-direction and a willingness to depart from social norms when appropriate (Crutchfield, 1962; Dellas & Gaier, 1970; Roe, 1953). Expanded autonomy has also figured prominently in theories of creativity. For example, Rank (1932, 1936) asserted that, in order to achieve our creative potential, we must first overcome our social conditioning and develop a strong and autonomous will.

I assess the autonomy–creativity relation in several new ways, using measures of per-

sonal autonomy derived from self-determination (SD) theory (Deci & Ryan, 1985b, 1991). My basic assumption is that self-determined people are able to resist the controlling situational and intrapersonal forces that can undermine creativity and are also better able to establish and maintain contact with intrinsic interests. They may accordingly gain access to deeper cognitive resources and creative capacities within themselves.

Experimental research provides one indication of why measures of SD and creativity should be linked. Amabile (1983, 1990) demonstrated that extrinsically motivated behavior is less creative than behavior motivated by intrinsic interest, confirming observations by Crutchfield (1962) and MacKinnon (1975). That is, when people perceive themselves as acting for some reason external to the experience itself, their ability to function innovatively is undermined (Amabile, 1983, 1990). SD theory (Deci & Ryan, 1985b) provides a context in which these findings can be related to conceptions of autonomy. The theory identifies extrinsically motivated behavior as one form of nonautonomous or controlled behavior. In contrast, intrinsically motivated behavior is a form of autonomous behavior. In conceptual agreement with

I thank Rich Ryan and Tim Kasser for their comments on a draft of this article.

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Amabile's (1983) findings, Koestner, Ryan, Bernieri, and Holt (1984) demonstrated that creativity within children was enhanced when autonomy-supportive language was used by the experimenter and decreased when controlling language was used. Furthermore, research in the SD tradition has shown that controlling environmental factors may negatively influence the quality of functioning in many ways besides reducing creativity (Deci & Ryan, 1985b, 1991). Extrinsicly motivated behavior is less flexible, less satisfying, and less likely to be later engaged in spontaneously; furthermore, learning that occurs under extrinsic conditions is more superficial and less transferable than intrinsically motivated learning (for a recent review, see Ryan & Stiller, 1991). In sum, these laboratory studies indicate that, when momentary behavior is engaged in for non-self-determined reasons, the quality of cognitive engagement and performance suffers.

However, research in the SD tradition has demonstrated that autonomy and control do not reside solely in the situation; they may also be general personality characteristics. The "perceived locus of causality" continuum (Heider, 1958) specifies that a person's reasons for acting within a behavioral domain may range from external-to-introjected (two controlled reasons) to identified-to-intrinsic (two autonomous reasons; Ryan & Connell, 1989). Persons whose reasons for acting within given domains (e. g., religious or academic endeavors) are more autonomous than controlled (i.e., more self-determined) have been shown to be better adjusted and more successful within those domains (Plant, 1990; Ryan & Connell, 1989; Ryan, Rigby, & King, 1993; Vallerand & Bissonnette, 1992). A second demonstration that SD is a general and important per-

sonality characteristic is that research with the General Causality Orientations Scale (GCOS) has shown that persons oriented toward autonomy (across a range of life situations) are psychologically healthier than are persons oriented toward environmental controls (Deci & Ryan, 1985a).

Thus, three lines of evidence support the general hypothesis that measures of SD in personality should be related to trait creativity. First, past studies of creativity suggest that personal autonomy (a related trait) is a core characteristic of creative persons (Baron & Harrington, 1981). Second, a variety of research indicates that, when people's sense of SD is undermined within situations, their cognitive and creative abilities are impaired within those situations (Amabile, 1983; Koestner et al., 1984; Ryan & Stiller, 1991). Third, research within the SD tradition indicates that people who act for self-determined reasons within a given behavioral domain, or orient toward the environment in an autonomous way, function optimally. The primary goal of the two studies reported here was to test directly the above hypothesis by examining trait creativity in relation to dispositional SD within three different measurement domains: characteristic personal goals, general motivational orientations, and overall self-concept.

Study 1

Method

Subjects and procedure. Subjects were 113 psychology students (29 men, 84 women) at a small private university in the northeastern United States. They participated for extra credit and completed the assessment materials during two evening sessions held 8 weeks apart.

Creativity measures. Two self-report inventories were employed: the Creative Personality Scale (CPS; Gough, 1979) of the Adjective Check List (ACL; Gough & Heilbrun, 1983) and the Problem-Solving/Creativity subscale (PSCS) of the Self-Description Questionnaire (SDQ-III; Marsh & O'Neill, 1984). The CPS is the most widely used paper-and-pencil measure of the creative personality (cf. Domino, 1994; Helson & Wink, in press; Kadusa & Schaefer, 1991; McRae, 1987; Solomon, 1985; Wink, 1991, 1992) and is probably the most valid as well (Hocevar, 1981). The 30 trait adjectives in the scale (18 indicative, 12 contraindicative) were derived empirically and were the set most predictive of actual creativity across a diverse group of 1,701 people studied at the Institute of Personality Assessment and Research (Gough, 1979). In the current study, the 30 adjectives of the CPS were combined with 30 other adjectives randomly selected from the 300-item ACL to form a checklist of 60 traits, each of which subjects rated as self-descriptive or not.

In contrast to the CPS, the PSCS directly asks subjects about their cognitive style and creativity. Marsh and O'Neill (1984) reported preliminary criterion validity for this 10-item scale that was designed specifically for use in college populations. It contains items such as "I am good at combining ideas in ways that others have not tried" (one of 5 indicative items) and "I am not very original in my ideas, thoughts, and actions" (one of 5 contraindicative items). Subjects in this study rated themselves using a scale ranging from *disagree strongly* (1) to *agree strongly* (4). After all items had been recoded toward high creativity, a composite was created by summing across the 10 items.

SD measures. The "personal striving" construct (Emmons, 1986) was employed to create two measures of trait SD. *Personal strivings* are what people typically try to do in their everyday behavior. For example, a person might typically strive to "impress others," "do my best at whatever I undertake," "keep my surroundings neat," or "find God in the everyday world." In an open-ended task, people usually list 10 to 15 strivings (Emmons, 1986, 1989). Once elicited, idiographic strivings can be rated by subjects in a variety of ways; ratings can be summed across strivings, permitting overall "striving styles" to be nomothetically compared.

In Study 1, the extent to which subjects strive for autonomous, as compared to controlled, reasons was assessed (Sheldon & Kasser, in press). Subjects first generated at least 10 strivings. They then selected their 10 most characteristic strivings and rated how much they strive for each of four reasons, using a scale ranging from *not at all because of this reason* (1) to *completely because of this reason* (9). *External reasons* were presented as "striving because somebody else wants you to or because you'll get something from somebody if you do." *Introjected reasons* were presented as "striving because you would feel ashamed, guilty, or anxious if you didn't strive for this." *Identified reasons* were presented as "striving because you really believe it's an important goal to have—you endorse it freely and wholeheartedly." *Intrinsic reasons* were defined as "striving purely because of the fun and enjoyment that striving provides you." As in previous research on individuals' reasons for acting (Grolnick & Ryan, 1987; Grolnick, Ryan, & Deci, 1991; Vallerand & Bissonnette, 1992), a global self-determined reasons-for-striving score was derived by doubling the extrinsic

and intrinsic scores (the two extremes of the continuum) and then subtracting the sum of the external and introjected scores from the sum of the identified and intrinsic scores. Coefficient alpha for this 40-item composite was .89.

As a second goal-related predictor variable, the content of strivings was assessed in Study 1. To what extent do creative people list strivings with the explicit theme of achieving greater SD? Such an association might be expected by Rank's (1932) theory of creativity, which holds that people must actively strive toward greater autonomy in order to become creative. It might also be expected by SD theory, which assumes that people struggle to internalize the regulation of their behavior to satisfy an inherent need for experiential autonomy and that, as behavioral regulation is internalized, individuals become healthier and more effective (Deci & Ryan, 1991). Subjects' strivings were accordingly content-coded by two advanced undergraduate raters. *Strivings toward SD* were defined as those in which the person sought greater choice, sense of self, or steadfastness in the face of social pressures. Examples of such strivings include "I try not to be overly influenced by what others think," "I try to find my own center in times of stress," and "I try to make my own choices." Cohen's kappa, a measure of interrater agreement, was .85 between the two raters. Raters discussed disagreements until consensus was reached on how many of each subject's 10 strivings fell into the category of striving toward SD. This variable ranged from 0 to 4.

As a third measure of SD, the Autonomy Orientation subscale (AOS) of the GCOS (Deci & Ryan, 1985a) was employed. This measure defines the autonomous person as one who rates himself or herself as more

likely to respond in intrinsically motivated, volitional, or autonomy-supportive ways across a spectrum of 12 different life situations. Subjects' ratings (on a 9-point scale) were summed across the 12 items to create a measure of autonomy orientation.

The fourth measure employed was the Self-Determination Scale (SDS; Sheldon & Deci, 1993), which was designed to capture the prototype of the grounded and self-determined person. Preliminary research showed strong relations between this 10-item instrument and a variety of indices of well-being (Sheldon & Deci, 1993). The scale has two facets, Self-Contact and Choicefulness, which cohere both internally and with each other (alpha coefficients for the full scale ranged from .86 to .92 in several samples). For each item, subjects are asked to determine which of two statements feels more true, using a scale ranging from *only A feels true* (1) to *only B feels true* (9). For example, "my body sometimes feels like a stranger to me" versus "my body always feels like me" is 1 item of the Self-Contact facet, and "I feel that my choice of actions is often very limited" versus "I feel that I always freely choose my actions" is 1 item of the Choicefulness facet. The present study collapsed across the two facets. An overall SD score was computed for each subject by summing the 10 items.

Results

The means and standard deviations for the creativity and SD measures of Studies 1 and 2 are presented in Table 1.

The intercorrelations of the four SD measures in Study 1 are presented in the top half of Table 2. The AOS, self-determined reasons for striving, and the SDS were all significantly and positively intercorrelated.

Table 1. Means and Standard Deviations for Self-Determination and Creativity Measures

Measure	Study 1		Study 2	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-Determined Reasons for Striving	96.9	69.6	80.9	71.1
Striving Toward Self-Determination	0.7	0.9	1.5	1.5
Autonomy Orientation Scale	90.7	10.4	88.4	13.6
Self-Determination Scale	65.9	13.1	65.3	11.2
Creative Personality Scale	6.1	3.9	5.9	4.0
Problem-Solving/Creativity Scale	29.4	5.3	29.8	5.2

Table 2. Study 1: Correlations Between Self-Determination and Creativity Measures

Measure	Measure			
	Self-Determined Reasons for Striving	Striving Toward Self-Determination	Autonomy Orientation Scale	Self-Determination Scale
Striving Toward Self-Determination	.10			
Autonomy Orientation Scale	.42**	.12		
Self-Determination Scale	.42**	.21*	.55**	
Creative Personality Scale	.24*	.15	.28**	.39**
Problem-Solving/Creativity Scale	.32**	.21*	.32**	.45**

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

Striving toward SD was significantly correlated only with the SDS.

The correlations of the two measures of creativity with the four SD measures are also presented in Table 2. Seven out of eight of these positive correlations were significant. The exception was striving toward SD, which was not significantly related to the CPS ($r = .15$). Thus, the hypothesis that all four SD measures would be related to creativity was given strong support. The CPS and the PSCS were significantly correlated ($r = .66, p < .01$).

Brief Discussion

Creative people in this sample strived for self-determined reasons and had an autonomous motivational orientation and a general concept of themselves as self-determined.

Striving toward SD was related to only one of the two measures of creativity and was related to only one of the other three SD measures. This may reflect psychometric difficulties (i.e., the measure's skewness); however, it may also be interpretable in terms of conceptual ambiguities. Is a person who is striving toward SD an autonomous and creative person now, or might he or she be striving toward SD precisely because he or she is somewhat lacking in autonomy at this point in time? The latter supposition is consistent with the developmental process specified by Rank's (1932) theory. Rank suggested that, after leaving the stage of undifferentiated conformity, the future creator enters an intermediate conflicted stage that he or she must struggle to get beyond in order to finally emerge with true autonomous willpower. Because some of the subjects who listed strivings toward SD may be,

at present, lacking in autonomy, striving toward SD may be less predictive of creativity than the other SD measures. A second study was undertaken to obtain more information regarding these questions and to attempt to replicate the findings of Study 1.

A related question was also addressed in Study 2: How do creative people become self-determining? An obvious candidate is the autonomy supportiveness of their parents. That is, creative college students may have parents who respect their choices, encourage them to develop intrinsic interests, and encourage them to accept both responsibility and freedom. A large body of prior theory and empirical research suggests that this may be so. For example, Rogers's (1954) theory of creative environments holds that creativity is fostered when parents grant children psychological freedom; this theory has been tested and has received impressive empirical support (Harrington, Block, & Block, 1987). Rank (1936) also suggested that early life experiences, particularly concerning the degree to which parents support independence, have a strong influence on the development of autonomous creative will. Many investigations have supported the supposition that, when parents encourage independence, their children's creativity is enhanced (Albert & Runco, 1989; Getzels & Jackson, 1961; Rejskind, 1982). Thus, in Study 2, subjects' perceptions of their mother's and father's autonomy-supportiveness was assessed; it was predicted that these variables would also be positively related to creativity.

Study 2

Method

Subjects and procedure. Subjects were 132 students (52 men, 80 women) at the same

private university who participated for extra credit in a psychology class. Six packets of questionnaires were available throughout the semester. Participants came at scheduled times to complete the packets. Because subjects did not have to complete every packet, sample sizes differed across some of the predictor variables. The 132 subjects in the study were selected because they had scores on both creativity measures.

Measures. The CPS (Gough, 1979) was again administered, as was the PSCS (Marsh & O'Neill, 1984). As in Study 1, subjects generated 10 personal strivings and then rated how much they strive for extrinsic, introjected, identified, and intrinsic reasons. Ratings for each of the four reasons were summed across all strivings, and a global self-determined reasons-for-striving variable was computed in the same way as in Study 1 ($n = 129$). Strivings were again coded for SD themes ($n = 128$) by the same two raters. Cohen's kappa was .82 for the two raters. Finally, as in Study 1, subjects also completed the AOS ($n = 127$) and the SDS ($n = 112$).

Subjects were also given the Perceptions of Parents Scale (Robbins, 1995). On this instrument, subjects rate how true statements are of each parent, using 9-point Likert scales. The Autonomy Supportiveness subscale (8 items for each parent) was designed to assess the extent to which the parents support the subject's own perspective and initiative. A sample item is "My mother [or father], whenever possible, allows me to choose what to do." After appropriate recodings, responses were averaged separately for subjects' ratings of both mother ($n = 130$, $M = 6.4$, $SD = 1.7$) and father ($n = 126$, $M = 5.8$, $SD = 1.9$). The intercorrelation of these two variables was .52 ($p < .01$). In

Table 3. Study 2: Correlations Between Self-Determination and Creativity Measures

Measure	Measure			
	Self-Determined Reasons for Striving	Striving Toward Self-Determination	Autonomy Orientation Scale	Self-Determination Scale
Striving Toward Self-Determination	.01			
Autonomy Orientation Scale	.17*	.06		
Self-Determination Scale	.32***	.00	.27***	
Creative Personality Scale	.24***	.01	.24***	.33***
Problem-Solving/Creativity Scale	.23***	.08	.22**	.12

* $p < .10$. ** $p < .05$. *** $p < .01$.

Table 4. Study 2: Correlations Between Parental Autonomy-Supportiveness Variables and Self-Determination and Creativity Measures

Measure	Autonomy Supportiveness		
	Mother's	Father's	Combined
Self-Determined Reasons for Striving	.23***	.17*	.22**
Striving Toward Self-Determination	.00	-.09	-.05
Autonomy Orientation Scale	.23**	.13	.20**
Self-Determination Scale	.32***	.26***	.32***
Creative Personality Scale	.23***	.25***	.24***
Problem-Solving/Creativity Scale	.03	.18**	.12

* $p < .10$. ** $p < .05$. *** $p < .01$.

addition, a “parental autonomy-supportiveness” variable was also computed by summing the paternal and maternal variables ($n = 125$, $M = 12.2$, $SD = 3.2$).

Results

The intercorrelations of the four SD measures are reported in the top half of Table 3. All were significantly or marginally significantly and positively associated, with the exception of striving toward SD, which was unrelated to the other three predictors. Striving toward SD was also unrelated to the two creativity measures (see the lower half of Table 3). The other three SD measures (self-determined reasons for striving, the AOS, and the SDS) were all significantly and pos-

itively correlated with both creativity measures with one exception: The PSCS was not significantly associated with the SDS ($r = .12$). The CPS and the PSCS were significantly correlated ($r = .62$, $p < .01$).

The correlations of the parental autonomy-supportiveness variables with the four SD measures and with the two creativity measures are presented in Table 4. Looking first at the interrelations of the SD and parental autonomy-supportiveness variables, it can be seen that striving toward SD was related to none of the parental variables. The other three SD measures were significantly or marginally significantly and positively correlated with all parental autonomy-supportiveness variables with one exception: The AOS was

not significantly correlated with father's autonomy-supportiveness ($r = .13$). Thus, as might be expected, parental autonomy-supportiveness seems to be somewhat related to subjects' current sense of SD.

In the relation of the two creativity measures to the maternal and paternal autonomy-supportiveness variables, three of the four correlations were significant and positive with the exception of mother's autonomy-supportiveness, which was unrelated to the PSCS. When mother's and father's autonomy-supportiveness scores were aggregated, "parental autonomy-supportiveness" was significantly and positively correlated with the CPS but not with the PSCS (see Table 4).

General Discussion

Using measures derived from SD theory, these two studies affirm that personal autonomy is a core characteristic of creative people (Barron & Harrington, 1981). Creative subjects in these samples tended to strive for more self-determined reasons, endorse autonomous behavioral responses on the AOS, and feel more self-determined in general (i.e., grounded and choiceful). In Study 2, there was no relation between the number of strivings toward SD and creativity, the other three SD variables, or parental autonomy-supportiveness. This supports the earlier suggestion that subjects who are striving toward SD may not necessarily be autonomous and creative people as yet. Using Rank's (1932) conceptual framework, it appears that some people who give such strivings may be of an intermediate type who have broken away from undifferentiated conformity but have not yet achieved a high degree of autonomy and creativity.

Study 2 demonstrated that students' perceptions of parental autonomy-supportiveness may also be related to creativity. Although the self-report measures used cannot determine whether subjects' parents are actually more autonomy supportive, as is suggested by previous theory and research, in a sense the question may be moot. If these findings do result from a response bias on the part of creative subjects, then it is a bias consistent with one of the general hypotheses of the study—namely, that self-determining persons are disposed to perceive environments as autonomy supportive rather than controlling.

Although this study has established that trait measures of SD are related to trait creativity,¹ it has not established why this is so; no intermediate process variables have been assessed. However, the creativity literature offers several suggestions why SD and creativity are related. One hypothesis is that self-determined people might have some *inoculation* against (or resistance to) undermining situational forces (Amabile, 1983; Hennessey, Amabile, & Martinage, 1989; Hennessey & Zbikowski, 1993; Schubert, 1988) that enables them to be more creative overall. The cross-situational disposition to be self-determining might help creative people establish and maintain states of intrinsic motivation by helping them identify with their actions no matter how controlling the situation. In other words, people who tend to

¹It is worth noting that, although the correlations between SD and creativity measures were mostly significant, they were not large. This indicates that, although a disposition to be self-determining may be useful to people engaged in creative pursuits, a person who is self-determined is not necessarily a person who is creative. SD is only one of many personality characteristics relevant to creative performance.

define their behaviors as emerging from themselves may enable themselves to stay more deeply and creatively engaged in what they are doing.

Another (not necessarily competing) explanation for the SD–creativity link might be called the *attunement* hypothesis. Self-determining people may be more in touch with their *organismic integrative processes* (Deci & Ryan, 1991)—that is, the natural organizational tendencies inherent in developing life (Maslow, 1962; Rogers, 1964; Ryan, 1993; Sheldon & Kasser, in press). There are several possible reasons why such attunement may positively influence creativity. First, it may allow deeper processing of information and more ready transfer of information across knowledge domains (Ryan, 1993), both of which are characteristics thought to be conducive to creativity (Langley & Jones, 1988; Mumford & Gustafson, 1988). Second, organismically attuned people may be better able to enact receptive sets (Getzels & Csikszentmihalyi, 1976; Henle, 1974; Schactel, 1959) conducive to the discovery of new solutions to whatever questions they have posed themselves; thus, they may be more open to possible analogies or fleeting intuitions that are relevant to the problems with which they are concerned. Third, self-determined people are likely to devote more conscious attention to problems that genuinely interest them. By simply spending more time and energy thinking about questions of fundamental intrinsic concern rather than worrying about peripheral matters, a person may be more creative in the long run. Attention is a limited resource (Csikszentmihalyi, 1988) whose relation to creative performance may be underappreciated (Rothenberg, 1979).

Future research could be conducted to establish the specific processes by which

general feelings of SD help enhance cognitive performance and creativity. Besides the aforementioned possibilities, it may also be that self-determined action permits states of greater absorption (Tellegen & Atkinson, 1974) and playfulness or flow (Csikszentmihalyi, 1975)—states that may lead to enhanced creativity (Csikszentmihalyi & LeFevre, 1989). In addition, research is currently being conducted to test the inoculation hypothesis—that is, an effort is being made to show that self-determined people can resist the creativity-undermining effects of controlling laboratory situations.

The main weakness of this study was that it included no behaviorally based measure of creativity; instead, it relied on two self-report instruments. These two measures do not assess actual creative performance, but rather variables that are typically correlated with creative performance (Hocevar, 1989). However, it is worth noting that the two creativity instruments are somewhat different from each other. The PSCS asks subjects directly about their creative ability; in contrast, the CPS taps an assortment of criterion-keyed trait characteristics, most of which bear no obvious relation to creativity. Thus, the convergence of the SD measures in predicting these two creativity measures is encouraging. Given the fact that these studies employed college students who have had little time and opportunity for notable creative achievement as yet, scales such as the ones employed herein may offer adequate predictive capacity regarding subjects' future innovativeness (Hocevar, 1981). In using such scales, there is an assumption that a "disposition toward originality" exists (Barron, 1955) that both conduces to creative achievement and is tapped by these creativity scales. This article represents one effort to understand the creative disposition; it ap-

pears that creative people are likely to be self-determining people.

References

- Albert, R., & Runco, M. A. (1989). Independence and the creative potential of gifted and exceptionally gifted boys. *Journal of Youth and Adolescence, 18*, 221–230.
- Amabile, T. (1983). The social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology, 45*, 357–376.
- Amabile, T. (1990). Within you, without you. In M. A. Runco & R. S. Albert (Eds.), *Theories of creativity* (pp. 61–91). Newbury Park, CA: Sage.
- Barron, F. (1955). The disposition towards originality. *Journal of Abnormal and Social Psychology, 51*, 478–485.
- Barron, F., & Harrington, D. (1981). Creativity, intelligence, and personality. *Annual Review of Psychology, 32*, 439–476.
- Crutchfield, R. S. (1962). Conformity and creative thinking. In H. Gruber, G. Terrell, & M. Wertheimer (Eds.), *Contemporary approaches to creative thinking* (pp. 120–140). New York: Atherton.
- Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety: The experience of play in work and games*. San Francisco: Jossey-Bass.
- Csikszentmihalyi, M. (1988). Motivation and creativity: Toward a synthesis of structural and energetic approaches to cognition. *New Ideas in Psychology, 2*, 159–176.
- Csikszentmihalyi, M., & LeFevre, J. (1989). Optimal experience in work and leisure. *Journal of Personality and Social Psychology, 56*, 815–822.
- Deci, E. L., & Ryan, R. M. (1985a). The General Causality Orientations Scale: Self-determination in personality. *Journal of Research in Personality, 19*, 109–134.
- Deci, E. L., & Ryan, R. M. (1985b). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (Ed.), *Nebraska Symposium on Motivation* (pp. 237–288). Lincoln: University of Nebraska Press.
- Dellas, M., & Gaier, E. (1970). Identification of creativity: The individual. *Psychological Bulletin, 73*, 55–73.
- Domino, G. (1994). Assessment of creativity with the ACL: An empirical comparison of four scales. *Creativity Research Journal, 7*, 21–33.
- Emmons, R. A. (1986). Personal strivings: An approach to personality and subjective well-being. *Journal of Personality and Social Psychology, 51*, 1058–1068.
- Emmons, R. A. (1989). The personal strivings approach to personality. In L. A. Pervin (Ed.), *Goal concepts in personality and social psychology* (pp. 87–126). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Getzels, J., & Csikszentmihalyi, M. (1976). *The creative vision: A longitudinal study of problem-finding in art*. New York: Wiley.
- Getzels, J., & Jackson, P. (1961). *Creativity and intelligence*. New York: Wiley.
- Gough, H. (1979). A creative personality scale for the Adjective Check List. *Journal of Personality and Social Psychology, 37*, 1398–1407.
- Gough, H., & Heilbrun, A. (1983). *The Adjective Check List manual*. Palo Alto, CA: Consulting Psychologists Press.
- Grolnick, W., & Ryan, R. (1987). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology, 52*, 890–898.
- Grolnick, W., Ryan, R., & Deci, E. L. (1991). The inner resources for school achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology, 83*, 508–517.
- Harrington, D., Block, J., & Block, J. (1987). Testing aspects of Carl Rogers's theory of creative environments: Child-rearing antecedents of creative potential in young adolescents. *Journal of Personality and Social Psychology, 52*, 851–856.
- Heider, F. (1958). *The psychology of interpersonal relations*. New York: Wiley.
- Helson, R., & Wink, P. (in press). Originality and complexity in college women: Personality, attitudinal, and life correlates over thirty years. In A. Montouri (Ed.), *Unusual associates*. Cresskill, NJ: Hampton.
- Henle, M. (1974). The snail beneath the shell. In S. Rosner & G. Abt (Eds.), *Essays in creativity* (pp. 25–44). Croton-on-Hudson, NY: North River.

- Hennessey, B., Amabile, T., & Martinage, M. (1989). Immunizing children against the negative effects of reward. *Contemporary Educational Psychology, 14*, 212–227.
- Hennessey, B., & Zbikowski, S. (1993). Immunizing children against the negative effects of reward: A further examination of intrinsic motivation training techniques. *Creativity Research Journal, 6*, 297–307.
- Hocevar, D. (1981). Measurement of creativity: A review and critique. *Journal of Personality Assessment, 45*, 450–464.
- Hocevar, D. (1989). A taxonomy and critique of measures used in the study of creativity. In J. Glover, R. Ronning, & C. Reynolds (Eds.), *Handbook of creativity* (pp. 53–75). New York: Plenum.
- Kadusa, H., & Schaefer, C. (1991). Concurrent validity of the Creative Personality Scale of the Adjective Check List. *Psychological Reports, 69*, 601–602.
- Koestner, R., Ryan, R., Bernieri, F., & Holt, K. (1984). Setting limits on children's behavior: The differential effects of controlling vs. informational styles on intrinsic motivation and creativity. *Journal of Personality, 52*, 233–248.
- Langley, P., & Jones, R. (1988). A computational model of scientific insight. In R. Sternberg (Ed.), *The nature of creativity* (pp. 177–201). Cambridge, England: Cambridge University Press.
- MacKinnon, D. W. (1975). IPAR's contribution to the conceptualization and study of creativity. In I. Taylor & J. Getzels (Eds.), *Perspectives in creativity* (pp. 60–89). Chicago: Aldine.
- Marsh, H., & O'Neill, R. (1984). Self Description Questionnaire III: The construct validity of multidimensional self-concept ratings by late adolescents. *Journal of Educational Measurement, 21*, 153–174.
- Maslow, A. (1962). *Toward a psychology of being*. New York: Van Nostrand.
- McRae, R. (1987). Creativity, divergent thinking, and openness to experience. *Journal of Personality and Social Psychology, 52*, 1258–1265.
- Mumford, M., & Gustafson, S. (1988). Creativity syndrome: Integration, application, and innovation. *Psychological Bulletin, 103*, 27–43.
- Plant, R. (1990). *Motivation, expectation, and psychiatric severity in predicting dropout from outpatient alcoholic treatment*. Unpublished doctoral dissertation, University of Rochester, Rochester, NY.
- Rank, O. (1932). *Art and artist: Creative urge and personality development* (C. F. Atkinson, Trans.). New York: Knopf.
- Rank, O. (1936). *Truth and reality: A life history of the human will* (J. Taft, Trans.). New York: Knopf.
- Rejskind, F. (1982). Autonomy and creativity in children. *Journal of Creative Behavior, 46*, 58–67.
- Robbins, R. (1995). *An assessment of parental autonomy-support and control: Child and parent correlates*. Unpublished doctoral dissertation, University of Rochester, Rochester, NY.
- Roe, A. (1953). *The making of a scientist*. New York: Dodd Mead.
- Rogers, C. (1954). Towards a theory of creativity. *ECT: A review of general semantics, 11*, 249–260.
- Rogers, C. (1964). The concept of the fully-functioning person. *Psychotherapy: Theory, Research, and Practice, 1*, 17–26.
- Rothenberg, A. (1979) *The emerging goddess: The creative process in art, science, and other fields*. Chicago: University of Chicago Press.
- Ryan, R. M. (1993). Agency and organization: Intrinsic motivation, autonomy, and the self in psychological development. In J. Jacobs (Ed.), *Nebraska Symposium on Motivation: Developmental perspectives on motivation* (Vol. 40, pp. 1–56). Lincoln: University of Nebraska Press.
- Ryan, R. M., & Connell, J. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57*, 749–761.
- Ryan, R. M., Rigby, S., & King, K. (1993). Two types of religious internalization and their relations to religious orientations and mental health. *Journal of Personality and Social Psychology, 65*, 586–596.
- Ryan, R. M., & Stiller, J. (1991). The social contexts of internalization: Parent and teacher influences on autonomy, motivation, and learning. In P. R. Pintrich & M. L. Maehr (Eds.), *Advances in motivation and achievement* (Vol. 7, pp. 115–149). Greenwich, CT: JAI.
- Schactel, E. (1959). *Metamorphosis*. New York: Basic.
- Schubert, S. P. (1988). Creativity and the ability to cope. In F. Flach (Ed.), *The creative mind* (pp. 97–114). Buffalo, NY: Bearly.
- Sheldon, K., & Deci, E. (1993). *The Self-Determination Scale*. Unpublished manuscript, University of Rochester, Rochester, NY.

- Sheldon, K., & Kasser, T. (in press). Coherence and congruence: Two aspects of personality integration. *Journal of Personality and Social Psychology*.
- Solomon, R. (1985). Creativity and normal narcissism. *Journal of Creative Behavior*, 19, 47–55.
- Stein, M. (1974). *Stimulating creativity*. New York: Academic.
- Tellegen, A., & Atkinson, G. (1974). Openness to absorbing and self-altering experiences: A trait related to hypnotic susceptibility. *Journal of Abnormal Psychology*, 83, 268–277.
- Vallerand, R. J., & Bissonnette, R. (1992). Intrinsic, extrinsic, and amotivational styles as predictors of behavior: A prospective study. *Journal of Personality*, 60, 599–620.
- Wink, P. (1991). Self- and object-directedness in adult women. *Journal of Personality*, 59, 769–791.
- Wink, P. (1992). Three narcissism scales for the California Q-set. *Journal of Personality Assessment*, 58, 51–66.