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# Emotional creativity :: a social constructivist perspective.

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EMOTIONAL CREATIVITY: A SOCIAL CONSTRUCTIVIST PERSPECTIVE

A Thesis Presented

by

CAROL ELAINE THOMAS

Submitted to the Graduate School of the  
University of Massachusetts in partial fulfillment  
of the requirements for the degree of

MASTER OF SCIENCE

May 1989

Psychology

EMOTIONAL CREATIVITY: A SOCIAL CONSTRUCTIVIST PERSPECTIVE

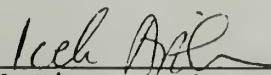
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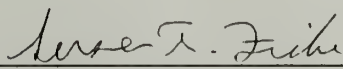
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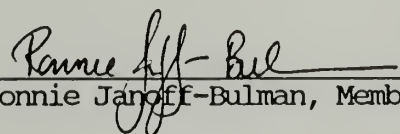
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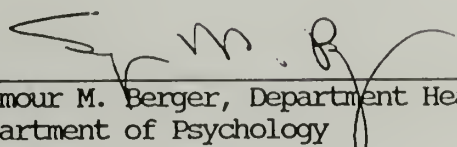
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To my parents

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ABSTRACT

EMOTIONAL CREATIVITY: A SOCIAL CONSTRUCTIVIST PERSPECTIVE

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Emotional creativity may be defined as the production of novel and adaptive emotional responses, either on the individual or group level. A correlational study was conducted to validate emotional creativity as a psychological construct, and to explore its relation to cognitive creativity. A battery of tests was administered to 100 subjects. The tests included three measures of emotional creativity and two measures of cognitive creativity, all developed for this study, as well as various measures of emotional and cognitive ability/reactivity. Evidence of convergent and divergent validity of emotional creativity was demonstrated.

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## CHAPTER 1

### INTRODUCTION

Creative acts are not always easy to recognize. In some respects, the more creative the act, the more likely it is to be viewed as foolish, harmful, or unsound. Although creativity is the principal means by which society advances, old ways of doing things must first be abandoned and new ways accepted. Disruption and change are not unduly welcomed, however; and at the moment of creation, resistance is inevitable. Eventually, providing the change proves adaptive or beneficial, suspicions are dispelled and the creative innovation is assimilated by society. Only then, in retrospect, does the creative value of the act seem to be obvious and undeniable. History offers many examples that illustrate this point, the most famous of which is perhaps that of Galileo. Centuries ago, he was forced on his knees to recant the Copernican doctrine. So intent were church authorities on denouncing Galileo, that they produced fraudulent documents to seal their case against him. The Copernican doctrine contradicted established religious thought, and thus church officials considered him a threat to their authority. The case of Galileo illustrates the consequences that may ensue when a departure from conventional ways of thinking appears to undermine the accepted values of a society. Even though society may benefit through such innovations, resistance to change may be difficult to overcome.

In other cases, creative acts go unrecognized because standards simply do not exist by which to evaluate them. Creative works are always evaluated by the standards that pertain to the particular field

of endeavor. There are times, however, when these standards do not yield to accommodate the assessment of an extremely novel production. This may be particularly true in the domain of artistic creativity, where the judgement of peers determines the merit of a work of art. Picasso, for example, was already recognized as a great artist during the period that he began to depart from accepted modes of artistic expression. One of his early works, Les Femmes d'Alger, in which he rejected the traditional representative form in favor of a bold, discordant style, was largely misunderstood by his peers. Even fellow artists who were seeking to invent new pictorial forms were confused by his creation. Although he believed that the painting more accurately portrayed the essence of reality, he removed it from public view for years. In subsequent years, the representational nature of Picasso's paintings continued to decrease, but eventually, new standards of artistic appraisal were developed. By later standards, he was recognized as the greatest artist of the twentieth century.

The above examples illustrate that creativity is sometimes unrecognized and unappreciated, because it threatens the dominant values of a society or cannot be evaluated by the accepted standards of the times. In either case, creativity represents a departure from conventional ways of thinking. The above examples also illustrate how creative behavior might be ignored in domains that are unlike accepted domains of creativity. Creativity is a problem-solving process, and in the course of their lives, people are often confronted with problems to solve. We refer to the type of problem that calls for an emotional response, and suggest that these problems can be solved in a

creative way--that is, an emotionally creative way. An emotionally creative response is one kind of novel and adaptive solution to a problem confronted in a social situation. But how is an emotionally creative response possible? According to the traditional view, emotions are largely innate ("instinctive"), physiologically-based responses, subject to regulation, but not to true innovation and change. Before proceeding further, therefore, an alternative view of emotion must be presented, one that can account for innovative emotional responses.

### Social Constructivist View of Emotion

The social constructivist theory of emotion, developed in recent years by Averill (1980, 1982, 1984) and others (see Harre, 1986), distinguishes among biological, psychological, and social determinants of emotion, with special emphasis on the latter. By referring to emotions as social constructions, Averill stresses the importance of the socialization process as a means of creating and maintaining specific categories of emotions. At an individual level, the ability to experience an established emotion is largely the result of assimilating socially-prescribed rules of interpreting and responding to particular kinds of emotional situations.

As a means to present Averill's theoretical approach, with special emphasis on those aspects that are important to the concept of emotional creativity, a number of issues that represent conventional ways of thinking about emotions are discussed below. The rationale behind each of these beliefs is presented and contrasted with a

social-constructivist position. By proceeding in this manner, we hope to directly address some of the implicit assumptions that appear to disallow the notion of creativity in an emotional domain.

1. Emotions are uncontrollable.

The belief that emotions are uncontrollable derives from the feeling of passivity that one often experiences during an intense emotional episode. Emotions are perceived as things that happen to us--they are neither self-initiated nor can they be terminated at will. Instead, they are like a powerful force, one that we struggle against, try to control, but in the end, seems to control us.

According to Averill (1980), the experience of passivity is a meaning that we impose on an emotional response, one that often has desirable consequences for us. The most obvious advantage of this perception is that it enables us to disclaim unacceptable aspects of an emotional reaction. In the case of anger, for example, we may want to deny responsibility for aggressive behavior. From a slightly different perspective, the experience of passivity may contribute to the perceived authenticity of some emotions. For example, if someone were to claim that their love for us was based on logical reasoning, we might be suspicious of their sincerity. With regard to the logician in love, e. e. cummings had the following to say: "he who thinks of the syntax of things, will never truly kiss you." Rational calculations are testable and refutable, whereas passion is not. Thus, a declaration of love based entirely on reason is subject to change for any number of reasons; however, a love that is beyond one's

control is believed to engender true commitment.

The lack of control during emotions is not simply a matter of individual experience, it is also based on group expectancies. It is part of the ideology of emotion. To take a rather extreme example, in Malaysia, "amok" is an emotional response observed in men who have suffered a loss of honor (Averill, 1982). An episode begins with a period of meditation or withdrawal, after which the amoker seizes the nearest weapon and attacks and kills every living thing that he encounters. The members of his village must try to immobilize him and even kill him first. Loss of control is an expected element of the emotional experience of amok, one that village members prepare for by keeping a long forked pole on hand for immobilizing an amok runner. The importance of social expectancies in determining this behavior is illustrated by two facts. First, when it was ordered that amokers no longer be killed, but captured, the incidence of running amok was greatly reduced. Amok was, in fact, a ritual form of suicide. Second, Europeans living in Malaysia have been known to run amok, including the anticipated feature of loss of control. By contrast, no Malaysian living in Europe, where social expectancies are different, has been known to run amok.

## 2. Emotions are noncognitive.

The belief that emotions are noncognitive stems largely from the assumption that emotions are closely linked to physiological changes (Averill, in press b). Although the separation of mind and body is no longer accepted by the scientific community at large, it is implicit



in many contemporary theories of emotion, particularly those that emphasize the physiological aspects of emotional responses. In a similar vein, emotional reactions may be viewed as noncognitive, because they are common to both humans and animals. Since animals are incapable of higher thought processes, human emotions are thus regarded as the product of primitive biological functioning. And on a more experiential level, people may conclude that emotions are noncognitive, because they sometimes feel that they cannot think properly when in an intense emotional state. Their perceptions may seem distorted and their vision clouded, giving rise to thoughts that they have to put their feelings aside in order to make a wise decision.

Averill (in press b) points out that some emotions, such as hope and pride, are experienced with very little bodily involvement and are primarily cognitive in nature. However, the noncognitive aspects of emotions have been emphasized, because the emotions that are studied most often are those that involve marked physiological changes. He suggests that if emotion researchers were to include a broader range of emotions in their investigations, the importance of cognitive activity to emotional experiences would become more widely accepted. With regard to nonhuman emotions, Averill (1980) regards the attribution of emotion to animals as largely metaphorical or derivative.

An emotion may not follow ordinary rules of logic, and hence may be considered "nonrational"; however, this does not imply that emotions are noncognitive (Averill, Catlin, & Chon, 1988). The

reasoning processes involved in emotional responses proceed according to a different set of rules, those that govern emotional behavior; and the soundness of emotional reasoning is thus determined by how these rules are instantiated. When broadly defined, "cognition" can encompass both types of rules--logical and emotional, and thus refer to both kinds of cognitive activity.

3. Emotions are automatic, stereotyped responses.

The belief that emotions are automatic, stereotyped responses is a function of the emotional script or paradigm that serves as a guide for the enactment of an emotional response (Averill, 1980, 1982). To be overly narrow, there are certain emotions that are necessary responses to certain situations, and certain elements of response that are necessary to certain emotional experiences. People implicitly assume that they and others must conform to the stereotyped pattern of response, and that deviations from the pattern somehow invalidates the emotional experience.

According to Averill (1984), emotional scripts are the internal representation of the social norms or rules that govern specific categories of emotion. As guides to behavior, rules of emotion are important in many respects--they determine what constitutes a given emotion, how it is enacted, and may be used as a means to evaluate reasoning in emotional situations, as discussed in the preceding section. It is important to note, however, that rules of emotion are not inflexible, but tend instead to be open-ended and allow improvisation. This qualification is reflected in Averill's

definition of an emotion, which he regards as a complex syndrome of interrelated response elements, with the added emphasis that no single element or subset of elements is essential to the emotion as a whole. Although an emotion is usually associated with a particular pattern of response, the pattern may vary considerably without invalidating the response as emotional.

At this point, a few words are in order about physiological reactions, which among the response elements are perhaps hardest to imagine as a rule-governed behavior that is subject to variation. Three factors need to be noted in this regard. First, physiological change is characteristic of only certain emotions (e.g., fear) and not others (e.g., hope), and of the former only when they are intense. Second, when physiological responses do occur, they are generally in support of whatever overt behavior is called for in the situation (e.g., fight or flight), and the overt behavior is subject to rules. Third, in some instances, the physiological responses may be directly influenced by social rules. An example would be the fainting demonstrated by young ladies during the Victorian period. In response to highly disturbing situations, it was considered appropriate for young ladies to faint, provided they could do so gracefully and safely. Although presumably a physiological reaction, fainting was governed by rules indicating when and how it should be done.

### Summary

The above discussion was intended to address those issues relating to emotions that would appear to disallow creativity in an

emotional domain. From a different perspective, support for the concept of emotional creativity can also be provided in terms of the commonalities that exist between emotions and creativity. Therefore, the following discussion is devoted to identifying some of those commonalities, as well as noting some of the differences between emotional and other types of creativity.

### Creativity in Different Domains

A creative response may be defined as a novel and adaptive solution to a problem. Different interpretations of this definition are applicable in different domains. In the scientific domain, creativity is the process of discovery (Rothenberg, 1979). Creative scientists are said to discover the laws of nature as they already exist in the physical world. Scientific inventions may represent tangible products that provide novel and adaptive solutions to problems, but scientific endeavors need not result in such products to be considered creative. The standards that pertain to this domain of creativity are those of correspondence with reality (however conceived). Through divergent thinking, leaps of thought, intuition, or whatever term is used to describe the "Aha!" phenomenon, creative scientists find new ways to organize and interpret elements in the physical world, which is the larger problem they attempt to solve. Although to a lesser extent than in other creative domains, scientific discoveries are also judged by the consensus of peers, who decide how well the product satisfies the test of correspondence.

The artistic domain of creativity is of particular interest,

because of the relationship of emotion to works of art; in a sense, art is the concretization of emotions. In contrast to the creative scientist, the problem faced by the artist is to communicate some aspect of experience within the limits imposed by formalized modes of expression (Beloff, 1970). Standards in this domain of creativity are characterized by shifts, as aesthetic preferences change and evolve; and creative products are evaluated by consensus, according to prevailing standards. However, as the case of Picasso illustrated, creative works of art may survive an initial period of rejection on aesthetic grounds, and find acceptance through standards adopted in later times.

In the domain of emotional creativity, the analogous problems are found primarily in the social world. They often involve interpersonal relationships, but may also reflect inner struggles relating to the self. In addition, natural disasters, accidents, and other forms of adversity also present problems that are relevant to this domain. A variety of responses are called for by situations such as these, one of which is an emotional response. Individuals may respond routinely when confronted with problems of this kind, or they may respond in an emotionally innovative way that represents a uniquely adaptive solution to the problem. Moreover, emotionally creative responses need not always represent solutions to problems in the ordinary sense; they may also be a means by which to affirm the moral and aesthetic values of the individual. In terms of process, creative emotional responses may result from an unusual combination of the response elements comprising an established emotional syndrome; or

alternatively, they may be the result of an unrecognizable pattern of response elements. In the latter case, the creative emotional response may evolve into an established emotion, if found to be an effective response to a particular kind of situation. As in other domains of creativity, the creative value of an emotional response is determined by consensus.

### Creativity as a Global Ability

This section is devoted to a brief review of previous research on creativity, as it is relevant to the present study. As noted, creativity is generally conceptualized as a global ability to produce novel and adaptive solutions to problems (Barron & Harrington, 1981). Although researchers have traditionally studied creativity in the arts and sciences, creative domains can represent nearly any aspect of life. Differences between domains have been the focus of many investigations; however, it is important to note that creative domains have been found to overlap to a significant degree. The cognitive abilities and personality characteristics that have been found to be associated with creativity are briefly described below.

### Cognitive Ability

The cognitive abilities presumed to be involved in creative performance have been the subject of many investigations, which typically focus on the generation of ideas from given information or pre-existing knowledge. In this regard, two cognitive abilities or operations have been of particular interest to researchers: (1)

divergent thinking--the generation of a variety of relevant solutions to a problem; and (2) convergent thinking--the generation of logical, unique, or "best" conclusions from given information (Guilford, 1971). As Barron and Harrington (1981) point out, however, divergent and convergent thinking are combined in the generation of a new idea--divergence implies departing from the obvious path to a solution and convergence occurs when the process reaches its conclusion by converging on an idea or result.

### Personality Characteristics

In past research, a fairly stable set of personality characteristics has been found to be related to creative performance in a variety of domains:

"high valuation of aesthetic qualities of experience, broad interests, attraction to complexity, high energy, independence of judgment, autonomy, intuition, self-confidence, ability to resolve antinomies or to accommodate apparently opposite or conflicting traits in one's self-concept, and a firm sense of self as 'creative'" (Barron & Harrington, 1981)

From a slightly different perspective, the adjectives in Harrington's (1975) Composite Creative Personality scale provide a similar picture of the creative person:

"active, alert, ambitious, argumentative, artistic, assertive, capable, clear thinking, clever, complicated, confident, curious, cynical, demanding, egotistical, energetic, enthusiastic, hurried, idealistic, imaginative, impulsive, independent, individualistic, ingenious, insightful, intelligent, interests wide, inventive, original, practical, quick, rebellious, reflective, resourceful, self-confident, sensitive, sharp-witted, spontaneous, unconventional, versatile, and not conventional and not inhibited"

Although the above characteristics are associated with nearly all forms of creative behavior, personality profiles have been found to

differ across specific domains of creativity. For example, creative scientists have been found to be more venturesome and self-assured than the average person, whereas the opposite is true for creative artists and writers (Barron & Harrington, 1981).

#### Present Study

The primary purpose of the research to be reported was to explore the psychological reality of emotional creativity. By identifying and examining the relevant theoretical issues, we hoped to establish emotional creativity as a valid domain of scientific inquiry. In addition, we wanted to explore its relation to the kind of creative thinking presumed to be involved in scientific creativity, which we refer to as "cognitive creativity." Thus, the nature of our research was both developmental and exploratory.



## CHAPTER 2

### METHOD

#### Subjects

Subjects were 100 undergraduate students at the University of Massachusetts, ranging in age from 18 to 56 (mean age = 20.0). There were 58 female and 42 male subjects.

#### Materials

Four categories of behavior were assessed in this study: emotional creativity, cognitive creativity, emotional ability, and cognitive ability. The meaning of emotional and cognitive creativity was discussed in Chapter 1. Emotional and cognitive abilities require brief additional explanation. Both emotions and cognitions are means of solving problems. If solutions tend to be effective or adaptive, then we may speak of an underlying ability. This is familiar usage in the cognitive domain. In an emotional domain, it is more common to speak of reactivity than ability, but this reflects an unwarranted assumption that emotions are dysfunctional. (See Wallace, 1966, for an abilities conception of emotional traits.)

In this section, the methods of assessment are discussed. Where appropriate, reliability is also reported.

#### Emotional Creativity

The emotional creativity tests consisted of one self-report measure, the Emotional Creativity Inventory, and two performance

tests, the Emotional Consequences Test and the Emotional Triads Test. Each of these measures attempts to capture a different aspect of emotional creativity.

Emotional Creativity Inventory. The Emotional Creativity Inventory was developed to provide an estimate of real-life emotional creativity. Based on theoretical preconceptions, a pool of items was created to tap aspects of emotional life believed to be related to emotional creativity. Some items, for example, addressed the novelty and adaptiveness of emotional responses, the importance placed on emotional life, and the tendency to think about emotions. Items were submitted to colleagues for feedback and subsequently revised, resulting in a scale of 39 items. Subjects were required to indicate the degree to which each item applied to their emotional behavior by rating the item on a 9-point scale. (See Appendix A.)

Preliminary analyses conducted on the original Emotional Creativity Inventory revealed that the value of Cronbach's alpha was .77 for females, .86 for males, and .83 for the total sample. After eliminating seven items with part-whole correlations of .10 or less, Cronbach's alpha for the final 32-item scale was .85 for females, .91 for males, and .89 for the total sample.

Emotional Consequences Test. The Emotional Consequences Test was modified from a subtest of the Torrance Tests of Creative Thinking (TTCT; Torrance, 1962), the most widely used battery of creativity tests (also called the Minnesota Tests of Creative Thinking). The TTCT is frequently used as the validating criterion for other tests of creativity (Amabile, 1983). The Emotional Consequences Test is a

"divergent thinking" test that requires subjects to list as many consequences as possible for each of four "impossible" events. This test differs from the TTCT version in that each item describes an improbable situation of an emotional nature. For example, one test item was: "What would be the consequences, if people fell in love with a different person every other day?" (See Appendix B for the complete test and examples of responses.)

The scoring technique developed by Torrance (1974) was modified for evaluating the Emotional Consequences Test. Each item was given a fluency score, indicating the number of relevant, nonrepeated ideas, and a flexibility score, indicating the number of different categories used. Departing from Torrance's procedure, each item was also rated on a 5-point scale for creativity, a measure representing the uniqueness or novelty of ideas. (See Appendix C for a copy of the instructions to judges.)

The correlations of the fluency, flexibility, and creativity scores with the other measures used in this study are available in Appendix D. However, in the analyses that follow, performance on the Emotional Consequences Test is indicated by a derived score obtained by multiplying the flexibility score by the creativity rating for each item and then summing across the four items. Based on the derived score, Cronbach's coefficient alpha for the four items comprising the Emotional Consequences Test was .64 for females, .76 for males, and .71 for the total sample.

Emotional Triads Test. The Emotional Triads Test is a "convergent thinking" test that presents subjects with a triad of

incongruent emotion terms and requires them to tell a story in which they would experience a mixture of the three emotions. The emotion terms were selected from Plutchik's emotion circle (1980, p. 170), which converts the similarity structure of emotion terms into angular placements. Four triads were constructed, each composed of three terms (e.g., lonely/angry/joyful) positioned approximately 120 degrees apart on the emotion circle. (See Appendix E for the complete test and examples of responses.)

Two judges scored each of the four stories for novelty, authenticity, integration, adaptiveness, and creativity on 5-point rating scales. Judges were instructed to consider the creativity rating as a combination of the first four dimensions, along with any other subjective criteria related to creativity. (See Appendix C for a copy of instructions to judges.) Analyses were conducted using the mean of two judges' ratings on each dimension. Because the creativity rating was highly correlated with a combined score consisting of the sum of the first four dimensions (females,  $r = .91$ ; males,  $r = .96$ ; total,  $r = .93$ ), the creativity score alone is used to represent emotional creativity, as measured by the Emotional Triads Test. Based on the creativity ratings, Cronbach's alpha for the four items was .54 for females, .76 for males, and .66 for the total sample; and interjudge reliability, computed using the Spearman-Brown formula, was .61 for the females, .77 for males, and .71 for the total sample.

Emotional Creativity Composite Score. The Emotional Creativity Composite Score is a measure obtained by converting the scores from the Emotional Consequences Test and the Emotional Triads Test to z-

scores and then taking the mean of the two scores. It should be noted that the correlations between the two performance tests, the Emotional Consequences Test and the Emotional Triads Test, was .34 ( $p < .01$ ) for the females, .24 ( $p < .06$ ) for the males, and .31 ( $p < .001$ ) for the total sample (one-tailed probabilities). Cronbach's alpha for the eight items comprising the combined composite score was .63 for females, .72 for males, and .68 for the total sample.

### Cognitive Creativity

The cognitive creativity tests consisted of the Cognitive Creativity Inventory, a self-report measure, and the Cognitive Consequences Test, a creative performance measure.

Cognitive Creativity Inventory. The Cognitive Creativity Inventory was developed from research reported by Sternberg (1985), investigating implicit theories of intelligence, creativity, and wisdom. He requested professors in the fields of art, business, philosophy, and physics, as well as laypersons, to list behaviors that they considered characteristic of an ideally intelligent, creative, or wise person. Items listed at least twice were then submitted to laypersons, who were asked to rate the extent to which each behavior was characteristic of each type of person. The 40 most highly rated behaviors for intelligent, creative, and wise persons were reported, some of which appeared for more than one type of person. Three self-report inventories were created from these items for this research. Items considered characteristic for more than one type of person were eliminated. In addition, some items pertaining to creative persons

had an emotional theme (e.g., "I am emotional."), and these were also eliminated. The resulting Cognitive Creativity Inventory consisted of 30 items, and subjects were required to rate the degree to which each item applied to their behavior on 9-point scales. (See Appendix F.) Cronbach's alpha for this scale was .82 for females, .80 for males, and .81 for the total sample.

Cognitive Consequences Test. As with the Emotional Consequences Test described above, the Cognitive Consequences Test was also modified from a subtest of the Torrance Tests of Creative Thinking (TTCT; Torrance, 1962). The four items comprising this test were taken directly from two versions of the TTCT. (See Appendix G for the complete test and examples of responses.)

The Emotional and Cognitive Consequences Tests were identical in administration and scoring. A derived score, corresponding to the Emotional Consequences derived score (namely, the flexibility score was multiplied by the creativity rating for each item, and the resulting products were summed across items), was also computed for the Cognitive Consequences Test. Based on that score, Cronbach's alpha for this test was .73 for females, .61 for males, and .69 for the total sample.

### Emotional Ability Measures

Emotional ability (i.e., adaptive reactivity) was assessed only in terms of self-report measures.

Affect Intensity Measure (AIM). The Affect Intensity Measure assesses the emotional intensity with which people generally react to

typical life events (Larsen, 1983). The scale consists of 40 items, each rated on a 6-point scale.

Although emotional ability was predicted to be positively related to emotional creativity, a number of items on the Affect Intensity Measure address a kind of dysfunctional affect which clearly would not be related to emotional creativity as a novel and adaptive emotional response. For example, the items "When I am nervous, I get shaky all over" and "The sight of someone who is hurt badly affects me strongly," differ in terms of the adaptiveness of the response. The latter indicates an intense, but nevertheless well-adjusted, emotional reaction. In view of the qualitative differences between items, and the implications of these differences for their relation to emotional creativity, two judges rated the items on the Affect Intensity Measure in terms of how representative they are of functional or dysfunctional affect. Items on which the judges reached agreement were used to construct Functional (13 items) and Dysfunctional (12 items) Subscales. The remaining items comprise a Neutral Subscale. (See Appendix H for a sample copy of each scale.) Coefficient alpha was .77 for males, .90 for females, and .90 for the total sample on the Affect Intensity Measure; .76 for males, .70 for females, and .76 for the total sample on the Functional Subscale; and .66 for males, .75 for females, and .76 for the total sample on the Dysfunctional Subscale.

The Functional Subscale was expected to be positively correlated with the measures of emotional creativity, and the Dysfunctional Subscale was expected to be uncorrelated or negatively correlated with

these measures. The Neutral Subscale is composed of "left over" items that were not expected to bear a systematic relationship to emotional creativity. Therefore, the correlations that obtained between the Neutral Subscale and the measures of creativity are not presented in the analyses that follow; however, they are available in Appendix I.

Affective Communication Test (ACT). The Affective Communication Test assesses the ability to communicate one's emotional state to others (Friedman, Prince, Riggio, & DiMatteo, 1980). The thirteen items comprising this measure are rated on 9-point scales. Coefficient alpha for the Affective Communication Test was .78 for females, .70 for males, and .75 for the total sample. (See Appendix J.)

#### Cognitive Ability Measures

The cognitive ability measures consisted of one self-report measure, the Intelligence Inventory, and three performance measures, GPA and the mathematics and verbal sections of the SAT.

Intelligence Inventory. The Intelligence Inventory was developed by the procedure described above with regard to the Cognitive Creativity Inventory. This scale consisted of 22 items that Sternberg (1985) found were descriptive of intelligent persons. Subjects were required to rate the degree to which each item applied to them on a 9-point scale. Coefficient alpha was .86 for females, .89 for males, and .87 for the total sample. (See Appendix K.)

GPA and Scholastic Aptitude Test Scores. GPA and scores on the mathematics and verbal sections of the Scholastic Aptitude Test served



as performance measures of cognitive ability.

### Other Measures

Marlowe-Crown Social Desirability Scale. The Social Desirability Scale was designed to assess the tendency of people to make socially desirable responses (Crown & Marlowe, 1964). The eighteen items comprising this measure were answered in a true-false format (See Appendix L.)

Wisdom Inventory. The Wisdom Inventory was developed based on Sternberg's (1985) findings in the same manner as the Cognitive Creativity Inventory described above. Subjects were required to rate the extent to which the 23 items, pertaining to the attributes of wise persons, applied to them on a 9-point scales. Coefficient alpha was .84 for females, .88 for males, and .86 for the total sample. (See Appendix M.)

### Procedure

Subjects were run in groups, ranging between 3 and 15 persons in size. Upon their arrival, subjects were asked to sign an informed consent form and told that four questionnaires, two timed creativity tests and two untimed personality tests, would be administered. They were advised that the study was expected to last nearly three hours and that a brief break would be taken halfway through the testing session.

The first questionnaire incorporated the eight items comprising the Emotional and Cognitive Consequences Tests. To reduce order effects that might result from taking one test prior to the other, the

four items comprising each test were incorporated into one testing instrument. Items were counterbalanced in a 4 x 4 Greco-Latin square design (nonrandom) with the stipulations that no two cognitive nor two emotional items could be adjacent. Instructions for the test were based on research indicating that creativity is enhanced by explicit instructions to be "creative," as well as by information provided to subjects about the nature of the test and the criteria for evaluation (Harrington, 1975; Amabile, 1983). Subjects were therefore encouraged by both oral and written instructions to be creative, and they were informed that spelling, grammar, and writing style would not be evaluated. Five minutes were allotted for each item. A timer equipped with an electronic beep was used to signal the elapse of each 5-minute interval. Upon hearing the beep, subjects were instructed to finish any incomplete sentence and turn to the next item.

After completing the first questionnaire, a test booklet containing the Social Desirability Scale, the Affective Communication Test, and the Affect Intensity Measure was distributed. Opscan sheets were provided for the responses to this questionnaire. Subjects were instructed to complete the questionnaire at their own pace. When the last subject had finished, the testing session was interrupted for a 10-minute break.

Following the break, the Emotional Triads Test was distributed. The four items comprising this test were counterbalanced in a 4 x 4 Latin-square design (nonrandom). Because of their length, the instructions were read aloud by the experimenter while the subjects followed along. Subjects were again encouraged to be creative and

informed that spelling, grammar, and writing style were not important. Seven minutes were allotted for the completion of each of the four items.

The last test booklet distributed incorporated the Emotional Creativity Inventory, the Cognitive Creativity Inventory, the Intelligence Inventory, and the Wisdom Inventory. An opscan sheet was provided for responses. In addition, a demographic data questionnaire was included as the last item in the test booklet in order to collect GPA and SAT scores. No time constraints were imposed.

After completing the testing session, each subject was given the option of receiving either 3 credits or \$2 and 2 credits. They then received a written feedback form and were dismissed.

#### Hypotheses

Although our research was largely exploratory and not involved with hypothesis testing in the strict sense, some tentative hypotheses were advanced. Overall, we expected scores on the emotional creativity tests, the emotional ability measures, and the wisdom inventory to form a cluster. An overlapping, but distinguishable, cluster was expected to consist of the cognitive creativity tests, the intelligence inventory, SAT, and GPA scores.

## CHAPTER 3

### RESULTS AND DISCUSSION I: QUANTITATIVE ANALYSES

This chapter reports the relationships found among the measures of emotional creativity, cognitive creativity, emotional ability, and cognitive ability. The first section is devoted to describing sex differences across all measures. The intercorrelations among the measures of emotional creativity are presented next, followed by a discussion of the relationships of these measures to the measures of emotional ability. The intercorrelations among the emotional and cognitive creativity measures are then discussed. In the last section, evidence of divergence between the domains of emotional and cognitive creativity is examined as a means to support the validity of emotional creativity as a psychological construct. (Correlations among all variables can be found in Appendix N.)

Social desirability has been omitted from the analyses that follow. Consistent with previous research, this variable was not found to be significantly related to the creativity measures. In addition, no significant sex differences emerged with respect to social desirability.

#### Sex Differences

To adumbrate briefly, males scored significantly higher than females on the mathematics section of the SAT, and females scored significantly higher than males on the measures of emotional ability. Because emotional ability was expected to be positively correlated with emotional creativity, females would also be expected to score

higher than males on the measures of emotional creativity. This relationship was confirmed, as the data presented below indicate.

### Creativity Tests

The mean scores for the emotional and cognitive creativity tests are presented separately for males and females in Table 1. Also reported are the results of two-tailed  $t$ -tests used to assess the significance of sex differences. As the table indicates, females scored higher than males on the Emotional Creativity Inventory (174.98 vs. 152.45,  $p < .001$ ); the Emotional Consequences Test (62.03 vs. 51.71,  $p < .05$ ); and the Emotional Creativity Composite (51.44 vs. 48.01,  $p < .05$ ). The measures of cognitive creativity revealed no significant sex differences.

### Emotional Ability Measures

The mean scores and the results of two-tailed  $t$ -tests for sex differences on the measures of emotional ability are presented in Table 2. The higher female relative to male scores resulted in significant sex differences across all measures.

As reported in Table 2, mean scores were significantly higher for females relative to males on the Affect Intensity Measure (134.72 vs. 116.83,  $p < .001$ ); on its Functional Subscale (49.93 vs. 43.86,  $p < .001$ ); and on its Dysfunctional Subscale (39.76 vs. 33.86,  $p < .001$ ). Similar results were obtained for the Affective Communication Test; the females mean score (61.10) was significantly higher than the males mean score (53.48),  $p \leq .01$ .

Table 1  
Sex Differences on the Creativity Tests

Creativity Test	Females		Males		t-value <sup>a</sup> (2-tailed)	p
	Mean	SD	Mean	SD		
<u>Emotional Creativity</u>						
Emotional Creativity Inventory	174.98	27.25	152.45	30.29	3.89	.001
Emotional Triads Test	10.24	2.355	9.54	2.99	1.32	<u>ns</u>
Emotional Consequences Test	62.03	24.09	51.71	24.29	2.11	.05
Emotional Creativity Composite	51.44	7.65	48.01	8.36	2.13	.05
<u>Cognitive Creativity</u>						
Cognitive Creativity Inventory	115.47	16.72	113.71	16.67	.52	<u>ns</u>
Cognitive Consequences Test	64.24	29.96	57.36	26.60	1.19	<u>ns</u>

Note. Females,  $n = 58$ ; males,  $n = 42$ .

a. Degrees of freedom = 98.

Table 2  
Sex Differences on Measures  
of Emotional Ability

Emotional Ability Measure	Females		Males		t-value <sup>a</sup> (2-tailed)	p
	Mean	SD	Mean	SD		
<b>Affect Intensity Measure</b>						
Functional	49.93	7.43	43.86	7.99	3.91	.001
Neutral	45.03	11.85	39.12	8.56	2.90	.005
Dysfunctional	39.76	8.04	33.86	6.87	3.85	.001
Total	134.72	23.125	116.83	19.89	4.05	.001
<b>Affective Communication Test</b>						
	61.10	15.39	53.48	13.31	2.59	.01

Note. Females,  $n = 58$ ; males,  $n = 42$ .

a. Degrees of freedom = 98.

### Cognitive Ability Measures

As indicated in Table 3, there was only one significant sex difference on the measures of cognitive ability. For the mathematics section of the SAT, the difference between the mean scores for females (524.15) versus males (580.50) was highly significant,  $p \leq .005$ . It should be noted that five females and two males failed to report their scores on both the mathematics and verbal sections of the SAT.

Table 3

Sex Differences on Measures  
of Cognitive Ability

Cognitive Ability	Females		Males		t-value (2-tailed)	p
	Mean	SD	Mean	SD		
GPA <sup>a</sup>	2.82	.56	2.66	.78	1.12	<u>ns</u>
SAT						
Mathematics <sup>b</sup>	524.15	82.96	580.50	104.54	-2.90	.005
Verbal <sup>b</sup>	530.85	74.03	523.00	95.04	.45	<u>ns</u>
Cognitive Ability Scales						
Intelligence <sup>c</sup>	118.47	18.24	123.62	20.66	-1.19	<u>ns</u>
Wisdom <sup>c</sup>	132.83	18.24	126.62	20.94	1.58	<u>ns</u>

Note. Females,  $n = 58$ ; males,  $n = 42$ .

- a. Degrees of freedom = 68.44
- b. Degrees of freedom = 91.
- c. Degrees of freedom = 98

Discussion

The sex differences reported in this section with regard to the measures of emotional creativity and emotional ability are of more than methodological interest. It appears that the emotional creativity tests are not merely verbal tests requiring the manipulation of emotional concepts, but that emotionality as a



personality trait contributes to performance on the test. This is especially evident by a comparison of the mean scores on the Emotional and Cognitive Consequences Tests (Table 1), which it will be recalled differed only in terms of content. Female mean scores were significantly higher than male mean scores on the Emotional Consequences Test, but not on the Cognitive Consequences Test. Thus, these results already lend support to the notion of emotional creativity as a valid psychological construct.

#### Interrelationships Among the Emotional Creativity Tests

The relationships that obtained among the three emotional creativity tests were examined to determine the extent to which they appeared to be measuring the same construct. As may be recalled from the construction of the Emotional Creativity Composite Score (see Methods Section), the correlation between the two performance measures, the Emotional Consequences Test and the Emotional Triads Test, was .34 ( $p < .01$ ) for the females, .24 ( $p < .06$ ) for the males, and .31 ( $p < .001$ ) for the total sample.

Table 4 presents the correlations between the Emotional Creativity Inventory and the two performance tests, including the Emotional Creativity Composite score. As indicated in the third column of Table 4, these correlations were significant at the .01 level or higher for the total sample. Considering the males and females separately, only one correlation failed to reach significance. The correlation between the Emotional Creativity Inventory and the Emotional Triads Test ( $r = .17$ ) was nonsignificant for the females.

Table 4

Relationship of the Emotional Creativity Inventory  
to the Emotional Creativity Performance Measures

Creativity Test	Emotional Creativity Inventory		
	Females	Males	Total
Emotional Consequences Test	.33**	.27*	.35***
Emotional Triads Test	.17	.32*	.27**
Emotional Creativity Composite	.31**	.37**	.39***

Note. Females,  $n = 58$ ; males,  $n = 42$ .

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$

Although the correlations among the measures of emotional creativity were not strong, they are encouraging in view of the exploratory nature of this study. It should be noted that these findings are based on measures employing two dissimilar testing methods (i.e, self-report and performance), thus rendering the evidence that they converged on the same underlying dimension somewhat more compelling.

Relationship of Emotional Creativity  
to Emotional Ability

In terms of individual differences, emotionality was expected to be a distinguishing trait of the personality profiles of emotionally creative persons. Therefore, an important aspect of construct validity was that the measures of emotional creativity be positively

correlated with measures of emotional ability. Evidence of the convergent validity of emotional creativity with respect to emotionality is presented below.

### Affect Intensity Measure

The total score on the Affect Intensity Measure was not significantly correlated with the performance measures of emotional creativity, therefore it will not be discussed in this section. The relationships of the Functional and Dysfunctional Subscales of the Affect Intensity Measure to the emotional creativity measures are presented in the first and second columns of Table 5. The differences between these correlations were tested by means of Fisher's procedure (Hays, 1981, p. 464), as indicated in the third column. It should be noted that although Fisher referred to his procedure as an " $\underline{r}$  to  $\underline{z}$  transformation," Fisher's  $\underline{z}$  differs from the  $\underline{z}$  score (Horowitz, 1974, p. 348).

With the exception of the Emotional Triads Test, the Functional Subscale obtained positive, significant correlations with all measures of emotional creativity for the total sample, as indicated in the first column of Table 5. The correlation between the Functional Subscale and the Emotional Triads Test ( $\underline{r} = .18$ ) was marginally significant at  $p < .09$ , two-tailed. The second column indicates that the Dysfunctional Subscale was uncorrelated with the performance measures of emotional creativity and positively correlated with the Emotional Creativity Inventory for the total sample.

As a means to explore further the relationship of affect

Table 5

Fisher's  $Z$  for the Difference Between Correlations  
of the Emotional Creativity Tests with the Functional  
and the Dysfunctional Subscales of the AIM

Creativity Test	<u>Affect Intensity Measure</u>		<u>Z-value</u> (2-tailed)	p
	Functional	Dysfunctional		
Emotional Creativity Inventory				
Females	.47***	.20	2.28	.05
Males	.58***	.23	2.67	.01
Total	.58***	.32***	3.26	.001
Emotional Consequences Test				
Females	.26*	.03	1.75	.08
Males	-.01	-.28	1.73	.08
Total	.20*	.00	2.00	.05
Emotional Triads Test				
Females	.04	-.04	.59	<u>ns</u>
Males	.24	-.27	3.26	.001
Total	.18	-.08	2.58	.01
Emotional Creativity Composite				
Females	.18	-.01	1.42	<u>ns</u>
Males	.15	-.35*	3.23	.001
Total	.24*	-.05	2.90	.01

Note.  $N = 100$

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; two-tailed

intensity to emotional creativity, Fisher's procedure was computed to test the significance of the differences between the correlations of the Functional and Dysfunctional Subscales with the emotional creativity measures. As indicated in the third column of Table 5, the differences between paired correlations reached significance across all measures of emotional creativity for the total sample.

Considering females and males separately, the values of Fisher's  $Z$  were at least marginally significant for the each pair of correlations, with the exception of the Emotional Triads Test and the Emotional Creativity Composite for the females. Thus, despite some inconsistencies in the patterns of correlations, the relative influence of functional to dysfunctional affect intensity for both males and females corresponds to that reported for the total sample.

#### Affective Communication Test

Table 6 reports the relationship of the Affective Communication Test with the measures of emotional creativity for females, males, and the total sample. As indicated in the first row of the table, the Affective Communication Test was highly correlated with the emotional creativity self-report measure, the Emotional Creativity Inventory, for both females and males. In addition, the correlation between the Affective Communication Test and the Emotional Creativity Composite was marginally significant for the males,  $r = .28$ ,  $p \leq .07$ , two-tailed.

It should be noted that the correlations between the Affective Communication Test and the emotional creativity performance tests reported for males in Table 6 may be somewhat biased by the scores attained by one subject. An examination of the scatterplots revealed that the male subject with the highest score on the Affective Communication Test had low scores on the emotional creativity tests. This subject's score was 83 (100th percentile) on the Affective Communication Test, 25 (14th percentile) on the Emotional Consequences

Table 6

Relationship of Affective Communication Test  
to the Emotional Creativity Tests

Emotional Creativity Test	Affective Communication Test		
	Females	Males	Total
Emotional Creativity Inventory	.34**	.55***	.47***
Emotional Consequences	.05	.17	.14
Emotional Triads	.00	.27	.15
Emotional Creativity Composite	.03	.28	.18

Note. Females,  $n = 58$ ; males,  $n = 42$ .

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; two-tailed

Test, 8 (31st percentile) on the Emotional Triads Test, and 42 (16th percentile) on the Emotional Creativity Composite. (All percentile ranks are from the relevant distribution of male scores.) By eliminating this subject from the analyses, the correlation between the Affective Communication Test and the Emotional Consequences Test increases to .26 for the males and to .17 for the total sample. In addition, the correlation between the Affective Communication Test and the Emotional Triads Test reaches significance for the males ( $r = .32$ ,  $p \leq .05$ ) and increases to .16 for the total sample. As a result, the correlation between the Affective Communication Test and the Emotional Creativity Composite Score also reaches significance for the males ( $r = .36$ ,  $p < .05$ ), as well as for the total sample ( $r = .21$ ,  $p \leq .05$ ).

The pattern of correlations in Table 6 indicates that the Affective Communication Test was more highly correlated with emotional creativity for the males relative to the females. However, none of the differences between paired correlations was statistically significant.

### Summary

The observed relationships of the emotional ability measures to the emotional creativity measures provide support for the construct validity of emotional creativity. The most interesting findings in this regard pertain to the subscales of the Affect Intensity Measure. Although somewhat different patterns emerged for males versus females, the results clearly indicate that intense functional affect is more strongly related to emotional creativity relative to intense dysfunctional affect. In addition to novelty, a defining criterion for creative acts in general is that such acts be in some way adaptive. Therefore, the observed relationship of adaptive aspects of emotionality to emotional creativity provides particularly strong evidence for the validity of this construct.

### Interrelationships Among the Emotional and Cognitive Creativity Tests

It will be recalled that emotional and cognitive creativity were expected to represent different, but overlapping, domains; therefore, the emotional creativity measures should be moderately correlated with the cognitive creativity measures. The relevant correlations are presented in Table 7. Support for the validity of the emotional

creativity measures, as measures of creativity, is indicated by the significant correlations reported in the table, providing the following two assumptions are granted: (a) the cognitive tests are valid measures of creativity, and (b) some of the same attributes that contribute to creativity in one domain (cognition) also contribute to creativity in another domain (emotion).

In addition to the predicted overlap of emotional and cognitive creativity, a degree of common "method variance" among the tests is also evident in Table 7. The uppermost rows of the table (left-hand column) show the correlations between the Emotional Creativity Inventory and the Cognitive Creativity Inventory. For the total sample, the correlation was .54 (.46 for females, .68 for males). Similarly, moving down to the next set of rows (right-hand column), it can be seen that the Emotional Consequences Test was highly correlated with the Cognitive Consequences Test (.66 for the total sample, .62 for females, and .71 for males). In these instances, the correlations involve similar methods, but different domains of creativity.

What happens to the size of the correlations when the same domain of creativity is assessed by different methods? Referring back to the first row of Table 4, it can be seen that the Emotional Creativity Inventory and the Emotional Consequences Test were correlated at .33 for females, .27 for males, and .35 for the total sample. Similarly, the correlations between the Cognitive Creativity Inventory and the Cognitive Consequences Test (not previously reported) were .23 ( $p \leq .05$ ) for females, .49 ( $p \leq .001$ ) for males, and .34 ( $p \leq .001$ ) for the total sample.



Table 7

Relationship of Cognitive to  
Emotional Creativity

Emotional Creativity Measure	Cognitive Creativity Test	
	Cognitive Creativity Inventory	Cognitive Consequences Test
Emotional Creativity Inventory		
Females	.46***	.09
Males	.68***	.22
Total	.54***	.17*
Emotional Consequences Test		
Females	.24*	.62***
Males	.32*	.71***
Total	.28**	.66***
Emotional Triads Test		
Females	.12	.13
Males	.51***	.46***
Total	.31***	.29**
Emotional Creativity Composite		
Females	.22*	.46***
Males	.53***	.74***
Total	.36***	.58***

Note. Females,  $n = 58$ ; males,  $n = 42$ .

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; one-tailed

In short, when similar methods are used to assess different domains of creativity (emotional vs. cognitive), the correlations are considerably higher than when different methods (self-report inventory vs. consequences test) are used to assess the same domain of

creativity. From these results, it is evident that common method variance represents a potentially confounding factor when it comes to assessing the discriminant validity of the tests, as will be discussed in the next section.

### Divergence of Emotional Creativity from Cognitive Creativity

Construct validity requires the demonstration of both convergent and divergent validity. In the preceding sections, support for the convergent validity of emotional creativity was indicated by the positive intercorrelations among (1) the emotional creativity measures, (2) the emotional creativity measures and the emotional ability measures, and (3) the emotional creativity measures and the cognitive creativity measures.

The present section is devoted to examining evidence in support of the divergent validity of emotional creativity. For this purpose, the relationship between emotional and cognitive creativity is further investigated; however, the focus is now shifted from the overlap between these two types of measures to an examination of those areas where they do not coincide. We first examine the correlations among the emotional and cognitive creativity measures themselves to determine if significant differences emerged between domains. Then, we look to see if emotional and cognitive creativity can be distinguished in terms of their respective relationships with the measures of emotional ability and cognitive ability.

## Cognitive Creativity

The suggestion that two creative domains are overlapping, but yet distinguishable, would be supported by a pattern of correlations in which the correlations among measures within a given domain are higher than the correlations between domains. In other words, an emotional creativity measure should be more highly correlated with another emotional creativity measure than with a cognitive creativity measure. Significant differences between such correlations demonstrate that two domains can be differentiated, and thereby provide evidence of divergent validity. When conducting this type of analysis, however, correlations between measures using dissimilar methods must be compared, because correlations among measures using similar methods tend to be inflated, as illustrated in the previous section.

Table 8 presents data relevant to the divergence between the domains of emotional and cognitive creativity, with the contaminating effects of common variance eliminated. Looking across the top rows of Table 8, the Emotional Creativity Inventory is more highly correlated with the Emotional Consequences Test (e.g.,  $r = .35$ , total sample) than it is with the Cognitive Consequences Test ( $r = .17$ ). The difference is in the predicted direction and marginally significant ( $p \leq .06$ , by Fisher's procedure). Looking across the bottom rows of Table 8, the Cognitive Creativity Inventory is less highly correlated with the Emotional Consequences Test (e.g.,  $r = .28$ ; total sample) than it is with the Cognitive Consequences Test ( $r = .33$ ). This, too, is in the predicted direction, although the difference is small and does not reach statistical significance.

Table 8

Fisher's  $Z$  for the Difference Between Correlations of the Emotional and Cognitive Consequences Tests with the Emotional Creativity Inventory and the Emotional Triads Test

Self-report Inventory	Consequences Test		$Z$ -value (2-tailed)	p
	Emotional	Cognitive		
Emotional Creativity Inventory				
Females	.33**	.09	1.87	.06
Males	.27*	.22	.33	<u>ns</u>
Total	.35***	.17*	1.91	.06
Cognitive Creativity Inventory				
Females	.24*	.28*	-.32	<u>ns</u>
Males	.32*	.38**	-.43	<u>ns</u>
Total	.28**	.33***	-.54	<u>ns</u>

Note: Females,  $n = 58$ ; males,  $n = 42$ .

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; one-tailed

### Emotional Ability

It will be recalled that emotional ability was expected to be a distinguishing characteristic of emotionally creative persons. Therefore, the measures of emotional ability provide another means by which divergence between the two creative domains can be demonstrated: emotional ability should correlate more highly with emotional creativity relative to cognitive creativity. This was in fact the case, as illustrated by Table 9, in which the correlations between the two creativity self-report inventories and the measures of emotional

Table 9

Fisher's  $Z$  for the Difference Between Correlations of  
the Emotional and Cognitive Creativity Inventories  
with the Emotional Ability Measures

Emotional Ability Measure	Emotional Creativity Inventory	Cognitive Creativity Inventory	Z-value (2-tailed)	p
Affect Intensity Measure				
Functional Subscale				
Females	.47***	.13	2.81	.01
Males	.58***	.38*	1.64	.10
Total	.58***	.24*	4.11	.001
Dysfunctional Subscale				
Females	.20	-.15	2.62	.01
Males	.23	-.06	1.84	.07
Total	.32***	-.09	4.15	.001
Affective Communication Test				
Females	.34**	.49***	-1.35	<u>ns</u>
Males	.55***	.32*	1.79	.07
Total	.47***	.42***	.61	<u>ns</u>

Note: Females,  $n = 58$ ; males,  $n = 42$ .

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; two-tailed

ability are compared by means of Fisher's procedure. The findings with respect to each measure of emotional ability are discussed below. In addition, similar analyses were conducted using the two performance

measures, the Emotional and Cognitive Consequences Tests. Although the results were generally in the same direction as those reported in Table 9, the differences between paired correlations were smaller and failed to reach statistical significance, as indicated in Table 9a.

Table 9a

Fisher's  $Z$  for the Difference Between Correlations of the Emotional and Cognitive Consequences Tests with the Emotional Ability Measures

Emotional Ability Measure	Consequences Test		$Z$ -value (2-tailed)	p
	Emotional	Cognitive		
Affect Intensity Measure				
Functional Subscale				
Females	.26*	.19	.55	<u>ns</u>
Males	-.01	-.05	.25	<u>ns</u>
Total	.20*	.13	.71	<u>ns</u>
Dysfunctional Subscale				
Females	.03	.04	.07	<u>ns</u>
Males	-.28	-.48***	1.47	<u>ns</u>
Total	.00	-.09	-.89	<u>ns</u>
Affective Communication Test				
Females	.05	.10	-.37	<u>ns</u>
Males	.17	.18	-.06	<u>ns</u>
Total	.14	.15	-.10	<u>ns</u>

Note: Females,  $n = 58$ ; males,  $n = 42$ .

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; two-tailed

### Affect Intensity Measure

As predicted, the subscales of the Affect Intensity Measure were found to be more highly correlated with the Emotional Creativity Inventory than with Cognitive Creativity Inventory. For the total sample, Table 9 indicates that the differences between paired correlations was highly significant for the Functional Subscale ( $Z = 4.11, p < .001, \text{two-tailed}$ ), as well as for the Dysfunctional Subscale ( $Z = 4.15, p < .001, \text{two-tailed}$ ). These findings indicate that the two domains of creativity can be differentiated in terms of their respective relationships to affect intensity.

### Affective Communication Test

The correlations between the Affective Communication Test and the two creativity self-report inventories were also compared for significant differences in magnitude by means of Fisher's procedure. As indicated in the lower portion of Table 9, no significant differences emerged between paired correlations. However, a marginally significant difference ( $p \leq .07, \text{two-tailed}$ ) emerged in the predicted direction for the males.

### Cognitive Ability

In contrast to the emotional ability measures discussed above, the cognitive ability measures were expected to correlate more highly with the cognitive creativity measures relative to the emotional creativity measures. As a means to obtain further evidence of divergence between the two creative domains, Fisher's  $Z$  was computed

to test the significance of the differences between paired correlations. The results of these analyses are reported in Table 10 with respect to the two creativity self-report inventories and in Table 10a with respect to the two creativity performance tests. Because evidence of divergent validity was not obtained with regard to the creativity performance measures (Table 10a), the discussion that follows focuses primarily on the creativity self-report inventories (Table 10).

### GPA

GPA was found to be moderately correlated with both the emotional and cognitive creativity measures for the total sample, as reported in the uppermost sections of Tables 10 and 10a. No significant differences emerged between paired correlations; therefore, emotional and cognitive creativity cannot be differentiated in terms of their respective relationships with GPA.

### Scholastic Aptitude Test

As previously mentioned, five female and two male subjects failed to report their SAT scores.

Mathematics Score. The predicted pattern of correlations emerged with respect to the SAT mathematics score and the two creativity self-report measures. As indicated in Table 10, the SAT mathematics score was more highly correlated with the Cognitive Creativity Inventory than with the Emotional Creativity Inventory for the total sample ( $Z = -3.39$ ,  $p \leq .001$ , two-tailed) and for the females ( $Z = -2.33$ ,  $p < .05$ ,



Table 10

Fisher's  $Z$  for the Difference Between Correlations of  
the Emotional and Cognitive Creativity Inventories  
with the Cognitive Ability Measures

Cognitive Ability Measure	Emotional Creativity Inventory	Cognitive Creativity Inventory	$Z$ -value (2-tailed)	$p$
GPA				
Females ( $n = 57$ )	.06	.02	.30	<u>ns</u>
Males ( $n = 41$ )	.40**	.41**	-.07	<u>ns</u>
Total ( $N = 98$ )	.26**	.21*	.52	<u>ns</u>
SAT-Mathematics Section				
Females ( $n = 53$ )	-.23	.08	-2.33	.05
Males ( $n = 40$ )	-.02	.26	-1.79	.07
Total ( $N = 93$ )	-.21*	.13	-3.39	.001
SAT-Verbal Section				
Females ( $n = 53$ )	.01	-.03	.30	<u>ns</u>
Males ( $n = 40$ )	.03	.36*	-2.17	.05
Total ( $N = 93$ )	.04	.17	-1.30	<u>ns</u>
Intelligence Inventory				
Females	.37**	.72***	-3.85	.001
Males	.41**	.76***	-3.50	.001
Total	.31***	.72***	-5.78	.001

Note: Females,  $n = 58$ ; males,  $n = 42$ ; except where noted.

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; two-tailed

two-tailed). In addition, a marginally significant difference emerged between paired correlations for the males ( $Z = -1.79$ ,  $p \leq .07$ , two-tailed). These findings indicate that emotional and cognitive creativity can be differentiated in terms of mathematical ability, as

Table 10a

Fisher's  $Z$  for the Difference Between Correlations  
of the Emotional and Cognitive Consequences Tests  
with the Cognitive Ability Measures

Cognitive Ability Measure	Consequences Test		Z-value (2-tailed)	p
	Emotional	Cognitive		
GPA				
Females ( $n = 57$ )	.07	.07	.00	<u>ns</u>
Males ( $n = 41$ )	.30	.29	.07	<u>ns</u>
Total ( $N = 98$ )	.20*	.18	.20	<u>ns</u>
SAT-Mathematics Section				
Females ( $n = 53$ )	.00	.04	-.30	<u>ns</u>
Males ( $n = 40$ )	.00	.08	-.50	<u>ns</u>
Total ( $N = 93$ )	-.06	.03	-.89	<u>ns</u>
SAT-Verbal Section				
Females ( $n = 53$ )	.17	.22	-.39	<u>ns</u>
Males ( $n = 40$ )	.23	.26	-.20	<u>ns</u>
Total ( $N = 93$ )	.20*	.24*	-.41	<u>ns</u>
Intelligence Inventory				
Females	.04	.16	-.90	<u>ns</u>
Males	.19	.35*	-1.08	<u>ns</u>
Total	.08	.22*	-1.41	<u>ns</u>

Note: Females,  $n = 58$ ; males,  $n = 42$ ; except where noted.

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; two-tailed

measured by the SAT.

Verbal Score. Additional evidence of the divergence between emotional and cognitive creativity was provided by the correlations that obtained between the SAT verbal score and the self-report

creativity measures for the males. Table 10 indicates that the SAT verbal score was more highly correlated with the Cognitive Creativity Inventory than with the Emotional Creativity Inventory for the males; the difference between correlations was significant,  $Z = -2.17$ ,  $p < .05$ , two-tailed.

### Intelligence Inventory

Perhaps the strongest support for the divergent validity of emotional creativity, as indicated by the measures of cognitive ability, is drawn from the findings pertaining to the Intelligence Inventory. As predicted, the Intelligence Inventory was more highly correlated with the Cognitive Creativity Inventory than with the Emotional Creativity Inventory. It should be noted that the correlations between these measures may be inflated by common method variance, but not differentially so.

Table 10 indicates that the differences between paired correlations were highly significant for the total sample ( $Z = -5.78$ ,  $p \leq .001$ , two-tailed), as well as separately for both males ( $Z = -3.50$ ,  $p \leq .001$ , two-tailed) and females ( $Z = -3.85$ ,  $p \leq .001$ , two-tailed). These findings suggest that emotional and cognitive creativity can be differentiated in terms of their respective relationships with self-reports of intelligence.

### Discussion

In this section, evidence of the divergence between the domains for emotional and cognitive creativity was presented in terms of their

respective relationships with the measures of emotional and cognitive ability. With regard to emotional ability, divergent validity was demonstrated by the relationships of the creativity self-report inventories to the subscales of the Affect Intensity Measure. For the total sample, the Emotional Creativity Inventory was more highly correlated with the subscales of the Affect Intensity Measure than was the Cognitive Creativity Inventory. In addition, a marginally significant difference was also found for the males between the correlations of the creativity self-report inventories and the Affective Communication Test. The emotional and cognitive creativity performance measures were not found to differ significantly in their correlations with the measures of emotional ability.

Evidence of divergent validity was also obtained with regard to the measures of cognitive ability. The Cognitive Creativity Inventory was more highly correlated with the Intelligence Inventory than was the Emotional Creativity Inventory for the total sample, as well as separately for both males and females. With regard to SAT scores, a significant difference was found between the correlations of the creativity self-report inventories and the mathematics score for the total sample. The difference between paired correlations for the verbal score was also significant for the males. As with the measures of emotional ability, the creativity performance measures did not diverge in their relationships with the measures of cognitive ability.

In this section, evidence of divergence between the domains of emotional and cognitive creativity was provided by the creativity self-report inventories. It is important to note, however, that the

accuracy of self-report measures has been a concern for researchers; thus, the failure of the performance measures to provide further evidence of divergent validity was disappointing. However, the accuracy of performance measures of creativity has also been the subject of debate. Problems with these measures derive from the construction of valid and reliable tests, as well as the accurate and reliable assessment of responses. These concerns have led some researchers to conclude that self-report measures are the most appropriate means by which to assess creativity (Barron & Harrington, 1981; Sternberg, 1985), while others maintain that performance measures are the most valid (Torrance, 1962; Amabile, 1983). We will not enter into that debate here; each type of measure has its advantages, as well as its limitations. In the present chapter, the self-report measures tended to give the most reliable (statistically significant) results. In the next chapter, we will examine, in a more qualitative fashion, the data obtained from the open-ended performance measures. At that point, it will be demonstrated that the two types of measures converge in this study; that is, they point to similar conclusions.

### Wisdom Inventory

As a psychological construct, wisdom appears to be related to both the emotional and cognitive domains. For example, persons who know how to respond emotionally in the right manner and on the right occasion are often considered wise, even if they are not particularly intelligent. Empirical research also supports the notion that wisdom

straddles the boundary between emotion and cognition. For example, in a multidimensional scaling study, Clayton (1982) obtained an affective and a cognitive dimension from the following terms, presumed to be related to wisdom: experienced, intuitive, introspective, pragmatic, understanding, gentle, empathetic, intelligent, peaceful, knowledgeable, sense of humor, and observant.

It will be recalled that, in the present study, a self-report Wisdom Inventory was developed, based on the work of Sternberg (1985). We predicted that wisdom would be positively and about equally correlated with both emotional and cognitive creativity. For the most part, this prediction was confirmed.

As indicated in Table 11, the Wisdom Inventory was highly correlated with both self-report measures of creativity ( $p$ 's < .001). For the females, however, the Wisdom Inventory was more highly correlated with the Cognitive Creativity Inventory than with the Emotional Creativity Inventory,  $Z = -2.03$ ,  $p < .05$ , two-tailed. The difference between paired correlations was in the same direction and marginally significant for the total sample,  $Z = -1.69$ ,  $p \leq .09$ , two-tailed.

With regard to the two performance measures of creativity, the Wisdom Inventory was significantly correlated with the Emotional Consequences Test for the total sample ( $r = .23$ ,  $p \leq .05$ ) and with the Cognitive Consequences Test for the males ( $r = .40$ ,  $p \leq .01$ ). None of the differences between paired correlations reached significance.

Table 11

Fisher's  $Z$  for the Difference Between Correlations of  
the Emotional and Cognitive Creativity Measures  
with the Wisdom Inventory

Wisdom Inventory	Emotional Creativity Inventory	Cognitive Creativity Inventory	$Z$ -value (2-tailed)	$p$
Females	.45***	.64***	-2.03	.05
Males	.61***	.67***	-.64	<u>ns</u>
Total	.54***	.65***	-1.69	.09

Wisdom Inventory	Emotional Consequences Test	Cognitive Consequences Test	$Z$ -value (2-tailed)	$p$
Females	.13	-.04	1.27	<u>ns</u>
Males	.29	.40**	-.78	<u>ns</u>
Total	.23*	.16	.72	<u>ns</u>

Note: Females,  $n = 58$ ; males,  $n = 42$

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; two-tailed

In sum, wisdom was found to be significantly correlated with both emotional and cognitive creativity. Although some divergence emerged between domains for the females, overall, the predicted relationship of wisdom to emotional and cognitive creativity was confirmed.

## CHAPTER 4

### RESULTS AND DISCUSSION II: QUALITATIVE ANALYSES

The primary purpose of this research was to explore the validity of emotional creativity as a psychological construct. The previous chapter illustrated the use of the emotional creativity tests as a means to establish construct validity; however, quantitative analyses often do not capture the richness of the data. In this chapter, therefore, we would like to offer a more qualitative approach to the analysis of our data by conveying our impression of the holistic aspects of emotionally creative responses. The free response format employed for the performance tests were particularly useful in clarifying a number of conceptual issues. Although our impressions are based on reading hundreds of responses, this analysis is admittedly speculative. However, some support for our assertions is provided by the self-report inventory, as will be discussed shortly.

Of the two performance tests, the Emotional Triads Test was an especially useful measure for examining the experiences of emotionally creative persons. After reading a total of 400 responses, a number of features emerged that seemed to distinguish the more creative ones. Before describing these features in detail, however, examples of poorly versus highly rated responses will be offered for purposes of comparison. The following responses on the Emotional Triads Test received low ratings:



- A<sup>-</sup>. I'm at the beach with Jim and his girlfriend. They're both all nice and tanned--beautiful beach people. They look at me and laugh at me and my sunburn. I blush, but they can't tell because I'm burnt. She should be more interested in me than in Jim. Once you take away his tan, there is not much to him. It even amuses me how their relationship stays together since Jim is so shallow. (Embarrassed/Jealous/Amused)
- B<sup>-</sup>. Mike was the object of the practical joke. The bucket of water fell on him when he opened the door. As amusing as I found this, I was also embarrassed by it when I remembered how I felt when I was the subject of a practical joke. But as I look at Mike and notice all the attention he is getting, I feel jealous that I had not received as much attention during my practical joke nor was I receiving as much attention now. (Embarrassed/Jealous/Amused)
- C<sup>-</sup>. I am sitting at the beach very peacefully and drinking a few beers, when all of a sudden some little faggot comes up and kicks sand on me and that just totally bewildered me. Impulsively and calmly, I got up and beat the crap out of the punk, then sat back down and popped open another brewsky. (Serene/Bewildered/Impulsive)

In contrast to the above, the following examples are representative of highly rated responses to the Emotional Triads Test:

- A. Driving on never to return...I wish. Another family fight, my typical reaction, get in the car and take off. Riding into the summer night air, mild and damp, makes me glad to be in motion, the breeze coming through the windows produces sensations of joy...I'm angry as I was chased out of my own home. Things will be humid, intense, and static upon my return. And I'm lonely as I drive alone with my broodings, angry that it is I who must go into the night...I'm better off this way. The air is so pleasant in the form of a breeze. It's a lonely feeling yet so peaceful it brings its own joy...and so I run in cycles until these cycles wear me down and I yield to my weariness and head for home. (Lonely/Angry/Joyful)
- B. The clouds are few, the sky is clear. I'm at the top of the cliff. It's real peaceful up here. Suddenly, I want to jump, I don't know why, I just want to. Calmly, I look down at what would be my unquestioned doom. It looks so peaceful; warm and friendly. But why, why do I want to dive into the hands of the grim reaper? What does this mean? I hesitate, then motion to jump, something strange pulls me back. It is the peacefulness of the cliff. I can't destroy that peacefulness. The wind feels like velvet against my skin as I slowly walk away and shake my head. Why? (Serene/Bewildered/Impulsive)

- C. How did he think this up from his position? My brother won't admit his lies even when the family tells him we know he's lying. He's a dropout, a chronic liar, and he's working in a 24-hour foodmart. It's my niece's birthday, and he got her a windup toy pig. She pushed her new dolls aside and grabbed the pig. You wind it up and it moves and squeals. To watch her play with it and to think of him...he's a genius...I watch the pig and I'm disgusted with him for his inability to organize his life, but he's his own person...I'm hopeful that something will sweep him out of the dimstore and into the spotlight he deserves...he's an actor, you know... (Affectionate/Disgusted/Hopeful)
- D. The woods are so peaceful and quiet. A great place to think out problems. Just why does she have to be sick anyway? What is going to happen to her? I don't know what to think anymore. I feel myself sinking into the peacefulness and longing of the woods. How I love to spend time here relaxing, being by myself, thinking. Yet, there is this longing deep in my heart just to run to her and tell her how special she is to me. Just let my feelings open up and spill out. No more hiding and wondering and guessing. But, is that what would be best for her? The woods are telling me to go; she needs to hear all that, they say. I don't want to leave this protective peace, though, I am not ready yet. Just let me sit in its arms and think. No, tomorrow may not give me this chance. Why can't I think this through? (Serene/Bewildered/Impulsive)
- E. I am at my mother's funeral. She has died after a long illness and now after all those years of suffering, the pain is gone. I am standing amidst a group of people, all of whom I can easily and quickly imagine being with my mother at some point in time. It seems odd that she is not visually present in the room with us. And I wonder how I should act now in front of these people...how do they know me, what do they associate me with? My mother? The poor daughter of a dead mother? Or should I feel strong and bold now? Now that it is over, I can be anyone I want to be. (Serene/Bewildered/Impulsive)
- F. In the help center, we see a lot of people come and go, every person with a unique set of problems, every person needing help, every person--you want to help. Today, I picked up a toddler. She was two or three, her face was covered with dirt and her clothes were a size too small. She had outgrown them, but her family couldn't afford to replace them. As I lifted her slight frame to give her a hug, just to let her know I cared, I could feel her tiny bones protruding. I shuddered in disgust. I proceeded to wash her little hands and wipe her dirty little face. And I looked into her warm, dark eyes, I felt as though the warmth of her glance was a sign that she would survive. (Affectionate/Disgusted/Hopeful)

Although a great deal of variation characterized the more creative responses to the Emotional Triads Test, as the above examples illustrate, the common features of these experiences suggest five factors that appear to be involved in the production of an emotionally creative response. Before describing these factors, it should be noted that they are not necessarily independent of the dimensions used to rate the responses (i.e., novelty, authenticity, adaptiveness, integration); and in some respects, they illustrate the means by which high ratings were obtained on these dimensions by emotionally creative persons. It might also be noted that the good responses may appear to be contaminated by verbal fluency; however, in some instances, the lack of articulation in poor responses seemed to be an indication of impoverished emotional experiences. The following are the five factors that appeared to be most characteristic of emotionally creative responses:

- 1) Emotional appraisals involve a more complex interpretation of a greater range of emotional stimuli.

This feature of the more creative responses is easily detected by comparing the good versus poor examples. In the poor examples, the respondents seem to be focused almost exclusively on themselves. When other aspects of the situation are attended to, they are interpreted primarily in terms of the relative hedonic value for the subject. The good examples, in contrast, demonstrate the tendency of emotionally creative persons to focus on a broader range of stimuli. Various aspects of the environment, as well as the behavior and emotional reactions of others, are given meaningful interpretations.

The emotional appraisals of emotionally creative person also seem to be related to a phenomenon observed in creative problem-solving. Performance on creativity tasks has been found to be positively correlated with overinclusion, the tendency to attend to a greater amount of information than necessary to solve a problem (Barron and Harrington, 1981). Although some of the information may appear to be trivial or even irrelevant, it has been suggested that attention to such details may yield fresh insight into the problem at hand. Although the examples given above do not directly demonstrate the advantages of such a strategy, it seems reasonable to assume that a more creative response would be generated by greater and more careful consideration of an emotional situation.

- 2) Various aspects of the emotional experience are more likely to be given a symbolic representation, as greater reflection moves the individual's focus away from the immediate situation.

In the emotionally creative responses, we note a higher incidence of the use of symbols as a means to express emotional states. In the psychoanalytic tradition, symbols are considered to be expressions of what is referred to as primary process, a mode of thought believed to be unusually accessible to creative persons (Arieti, 1976). In creative works, symbols communicate something beyond their obvious and immediate meaning. Even though they cannot be fully explained by ordinary rules of logic, Arieti has suggested that the creative use of symbolism "...seems to transport us closer to a world of absolute understanding that is more real than reality."

In attempting the integration of incongruent emotions required by

the Emotional Triads Test, emotionally creative persons more often relied on symbols as means to express a feeling that was not easily articulated. Example B illustrates how symbols were used as a means of creative expression by emotionally creative persons. In this example, the individual's inner conflict is abruptly ended by his desire to preserve the peacefulness of the cliff. Although more tangible motives are unspoken, his use of symbolism provides an intuitive understanding of the resolution of his conflict. As illustrated by this example, emotionally creative persons were better able to provide symbolic representations as a means to integrate and express the meaning of their emotional experiences. This aspect of emotional creativity is consistent with Goldstein's (1983) view that only through symbolism can we express our innermost feelings.

- 3) The behavior of others appear to be given more thoughtful consideration, and is less often construed to fit personal norms.

An important aspect of creativity in general is the ability to free oneself from routinized ways of thinking in order to explore new possibilities. In the domain of emotional creativity, routinized ways of thinking seem to be the product of personal and social norms. Emotionally creative persons, however, were able to set aside personal norms and thus appeared to be more flexible in their appraisals of others.

This feature of emotionally creative responses is illustrated above by Example C. In this example, the woman begins by expressing very strongly that her brother's behavior does not conform to her

personal norms. However, on further reflection, she recognizes that he is a genius in his own way. Perhaps the most interesting aspect of this response, however, is this person's apparent ability to simultaneously accommodate two conflicting assessments. She appears to vacillate between them, without relinquishing one for the other. This aspect of her response is also pertinent to another related characteristic of creative persons, as reflected in the Emotional Triads Test. In terms of cognitive style, creative persons are described as having a tolerance, or even a preference, for inconsistency or conflict with regard to perceptions and concepts (Arieti, 1976). The importance of this characteristic to creative achievement is illustrated by Kuhn's (1964) assertion that important scientific advances result from the tension between two incompatible modes of thought. But perhaps more relevant to the above example is Barron and Harrington's (1981) finding that creative persons have the ability to accommodate conflicting traits within their self-concepts. In terms of emotional creativity, it appears that conflicting traits in others' self-concepts are also accommodated with ease.

- 4) Emotionally creative persons become deeply involved in exploring the meaning of their emotional experiences.

Although the moment of creative insight is often perceived as spontaneous and effortless, creative endeavors are largely dependent on background knowledge, experience, and hard work. Creative persons are often described as pursuing a task with a singlemindedness and intense dedication that is undiminished by setbacks and obstacles. In the domain of emotional creativity, effort is manifested in terms of

involvement in an emotional experience. As example D illustrates, emotionally creative persons devote time and energy to exploring their emotional experiences. They work towards gaining a deep understanding of their feelings and consider the possible consequences of various courses of action.

The impact of involvement on the production of emotionally creative responses can be partially explained by examining the determinants of involvement in an emotional role. It should be noted first, however, that "emotional role" refers to the enactment of a recognized emotional syndrome, in accordance with socially-prescribed rules. In contrast, emotional creativity involves innovation with regard to emotional roles, in terms of the creation of new rules or the application of old ones. With the above distinctions in mind, involvement in emotional roles is determined by: (1) motivation, in terms of the importance of the emotional role to broader concerns; (2) prior experience, in terms of understanding the meaning of the role and learning to enact the appropriate behavior; (3) capacity, in terms of the ability to become emotional; and (4) the physical and social setting (Averill, 1980). Moreover, high levels of involvement in an established emotional role may be a necessary precondition to innovations in that particular role, as well as in the creation of new ones. From this analysis, the relevance of involvement to emotional creativity is readily apparent.

- 5) Emotionally creative persons appear to experience the less prototypical features of a given emotion.

From reading the responses of emotionally creative persons, it is

apparent that they not only react to situations with unusual emotions, but that they also experience the less prototypical features of a given emotion. This feature of emotionally creative responses is best illustrated by example E above. In this example, a woman describes her grief at her mother's funeral, which involves responses that are less typical than those that are usually observed in the bereaved. Certain responses, such as weeping, yearning, protest, and depression, appear to be universal elements of grief; however, none of these responses are essential to an experience of grief, and a great deal of variation is possible across individuals, as well as cultures (Averill, 1979). One response that is more prototypical of Non-Western than Western cultures is a sense of the deceased as still present. The Japanese, for example, experience the presence of the deceased, with whom they remain in daily contact by offerings of food, water, and incense. This woman appears to be experiencing this aspect of grief, which is implied by her remark that her mother is not "visually" present in the room. In addition, Averill describes another less common response to the disruption of an important social relationship. Although traumatic experiences are usually considered to have detrimental effects that must be avoided, he suggests that: "Grief can be a time for growth and change, as well as for anguish and despair--if it is properly managed." For some individuals, then, the loss of a social relationship can function as a catalyst for personal growth, as new ways of behaving and thinking must be established. This element of grief is clearly present in her final statement, "Now that it is over, I can be anyone I want to be." The sense of freedom



and enthusiasm in this statement seem contrary to our usual conceptions of grief; but as Averill has pointed out, they are nonetheless elements included within the emotional syndrome of grief. The presence of less prototypical features of emotional syndromes appears to be one way in which both novelty and flexibility are instantiated in emotionally creative responses.

Compared to the Emotional Triads Test, the Emotional Consequences Test did not provide as much insight into the nature of emotional creativity. Although emotionally creative persons demonstrated a greater ability to generate a variety of novel ideas in response to test items, the individual responses were too brief to provide a basis for further breakdown and analysis. In some ways, however, the Emotional Consequences Test was a "purer" measure of emotional creativity in that it was less contaminated by verbal fluency.

As described in an earlier section, a composite creativity score was obtained by combining scores from the Emotional Triads and the Emotional Consequences Test. This score, we may assume, reflects a more accurate measure of emotional creativity than the score from either test alone. In order to explore the way that emotionally creative persons describe themselves, as reflected by their responses to the self-report measure, the Emotional Creativity Inventory, the composite score was used to form high versus low creativity groups. More specifically, the high creativity group was composed of subjects whose composite scores fell above the median, and the low creativity group was composed of those subjects whose composite scores fell below the median. A series of t-tests were then conducted on the items of

the Emotional Creativity Inventory. Those items on which the high creativity group scored higher are presented in Table 11, along with the levels of significance.

Based on an examination of the items listed in Table 11, the high versus low creativity groups appeared to differ in their self-descriptions primarily on four dimensions, which are briefly discussed below. Where appropriate, the relationship between each dimension and the five common features of creative responses to the Emotional Triads Test, as presented in the previous section, are also discussed.

1. Emotionally creative persons endorsed items which indicate the ability to experience a wide range of emotions and to experience them deeply.

Emotionally creative persons described themselves as being emotionally sensitive, experiencing deep emotions, and feeling authentic when in an emotional state. In general, these items indicate that the high creativity group has a tendency to respond to situations with greater emotionality. With respect to the Emotional Triads Test, this aspect of their self-descriptions appears to relate to Feature #1 (complex emotional appraisals), as well as Feature #3 (sensitivity in the appraisals of others).

2. Emotionally creative persons endorsed items that indicate that they value and try to understand their emotional lives.

A large number of items were endorsed that pertain to this aspect of emotional creativity, indicating the importance of emotional life to emotionally creative persons, as well as the perseverance and diligence with which they work through their emotional experiences.

Overall, these items relate to involvement in emotional experiences, which was noted as a common feature of creative responses to the Emotional Triads Test (Feature #4). In addition, this aspect of emotional creativity is consistent with the use of symbolism as means to achieve an integrative understanding of emotional experiences (Feature #2).

3. Emotionally creative persons described themselves as having unusual emotional reactions.

This aspect of the self descriptions of the high creativity group indicates their ability to generate novel emotional responses. It will be recalled that novelty is an important criterion for creativity in general. However, it is also important to note that although their emotional responses may be novel or innovative, emotionally creative persons also appear to be respected by others. Although this does not necessarily support the notion that their responses are adaptive, it does suggest that they are not considered maladaptive.

4. Emotionally creative persons describe themselves as effective at communicating their emotions to others.

This characteristic of the high creativity group appears to reflect the effort that emotionally creative persons devote to their emotional lives, in that they understand the meaning of their experiences and can therefore share these experiences with others. In this sense, this aspect of their self-descriptions is consistent with Feature 4 of the Emotional Triads Test (involvement in emotional experiences). In addition, the use of symbolism (Feature 2) by

emotionally creative persons was noted as an effective means of communicating the meaning of emotional experiences to others. Finally, it might be noted that the Emotional Creativity Inventory was highly correlated with the Affective Communication Test ( $r = .47, p \leq .001$ , two-tailed).

In short, the self-descriptions of the high creativity group are generally consistent with the common features found with regard to emotionally creative responses on the Emotional Triads Test, as discussed in the previous section. Because of the nature of these analyses, it is not possible to document these relationships with greater precision. As stated in the introduction to this chapter, however, our interest was to provide a qualitative analysis of our data, by which we hoped to expand our understanding of the nature of emotional creativity.

Table 12

Self-Descriptions of High Emotionally Creative Group  
Based on the Emotional Creativity Inventory

p < .01

1. I am an emotionally sensitive person.
2. I am interested in the emotional aspects of my life.
3. My emotional life is important to me.
4. I like art, poetry, music, dance, and paintings that arouse new and unusual emotional reactions.

p < .05

1. I am good at expressing my emotions.
2. When I have a strong emotional reaction, I search for reasons for my feelings.
3. I sometimes feel that I am having an appropriate emotional reaction to a situation, even though my friends do not understand my feelings.
4. I think about how my emotional reactions will affect other people.
5. I communicate my emotions well.
6. I am sensitive to the emotional experiences of others.

p < .10

1. I think about and try to understand my emotional reactions.
2. I think about past emotional experiences to help me cope with a current emotional problem.
3. I sometimes experience a variety of different emotions at the same time.
4. I am unable to experience deep emotions. (Reversed)
5. I am able to communicate my feelings effectively.

p < .15

1. I am in touch with my feelings.
2. My emotional reactions do not reflect who I really am. (Reversed)
3. I often react to situations in ways that others would not, but they usually understand and respect my feelings.

## CHAPTER 5

### SUMMARY AND CONCLUSION

The construct validity of emotional creativity was investigated in this research. An important criterion in this regard was to provide evidence that emotional creativity was positively related to the global domain of creative ability. Support for this notion was provided by the pattern of positive correlations that obtained among the measures of emotional and cognitive creativity, indicating that they converged on a general creativity dimension (Chapter 3, Table 7, p. 38). It was also important to demonstrate that the measures of emotional creativity formed an interrelated cluster. Evidence in this regard was provided by the positive intercorrelations that obtained among these measures (Chapter 3, Table 4, p. 31).

Another criterion for construct validity was that emotional creativity obtain positive correlations with presumably related behaviors. Measures of emotional ability (i.e., functional reactivity) were utilized for this purpose, and the most interesting findings in this regard were those related to the Affect Intensity Measure. Although somewhat different patterns emerged for males versus females, the findings clearly indicate that intense functional affect was more strongly related to emotional creativity than intense dysfunctional affect. Conceptually, these findings relate most directly to the adaptive aspects of creative emotional responses.

We also examined the relationship between emotional and cognitive creativity, which it will be recalled were hypothesized to be related, but distinguishable, creative domains. By investigating their

respective relationships with emotional and cognitive ability, we obtained some evidence of divergence between the two domains. With regard to emotional ability, significant differences emerged between the correlations of the creativity self-report inventories and the subscales of the Affect Intensity Measure. In terms of cognitive ability, the correlations between the self-report inventories and the SAT mathematics score were significantly different. In addition, a significant difference between paired correlations emerged with respect to the verbal score for the males. Finally, the difference between the correlations of the two self-report inventories and the Intelligence Inventory was also significant. The results of these analyses lend some support for the notion that emotional and cognitive creativity represent two partially distinct creative domains.

In addition to the analyses discussed above, a qualitative analysis was offered in Chapter 4 in order to provide a better understanding of the nature of emotional creativity. From this analysis, the following composite picture of emotionally creative persons was constructed: Emotionally creative persons have a wide emotional range that includes both unusual emotional responses as well as the less prototypical responses associated with established emotions. They experience emotions deeply and become highly involved in their emotional life. Their emotional appraisals are complex, and they try to understand and find meaning in their emotional experiences. They are able to engage in unconventional thinking in terms of personal and social norms and tolerate inconsistency in their perceptions and ideas. Finally, they are effective at communicating

their emotional state to others, and often use symbolism as a means of expression.

Although both emotion and creativity are elusive phenomena to investigate, the results of this study indicate promising avenues for future research. The construction and assessment of our creativity performance tests demonstrated the difficulties with such measures; however, the findings with regard to our self-report measure, the Emotional Creativity Inventory, were encouraging. This investigation clarified a number of conceptual issues, which will allow the Emotional Creativity Inventory to be refined and expanded and its relation to other psychological variables to be explored.



APPENDIX A: EMOTIONAL CREATIVITY INVENTORY



60. I think about and try to understand my emotional reactions.
62. I am an emotionally sensitive person.
67. When I have a strong emotional reaction, I search for reasons for my feelings.
71. I communicate my emotions well.
73. I can vary my emotions effectively to fit the situation.
83. My emotional intuition is accurate.
85. I am unable to experience deep emotions.<sup>b</sup>
87. I think about how my emotional reactions will affect other people.
90. My emotional life is important to me.
93. I respond well in situations that call for new or unusual emotional responses.
96. I often imagine myself in unusual emotional situations.
98. I am interested in the emotional aspects of my life.
100. I sometimes experience a variety of different emotions at the same time.
103. I am able to communicate my feelings effectively.
111. In some situations, I have felt combinations of emotions that most people would not feel.
118. I often react to situations in ways that others would not, but they usually understand and respect my feelings.

NOTES:

- a. Items were interspersed with items from the General Creativity, Intelligence, and Wisdom Scales. Item numbers indicate the item's actual position within the inclusive scale.
- b. Item reversed for scoring.

APPENDIX B: EMOTIONAL CONSEQUENCES TEST

## Emotional Consequences Test

### Instructions:

This test will give you the opportunity to think creatively by presenting you with problems for which you will be able to think of many possible solutions. On the following pages, you will find eight improbable situations. Imagine that each of the situations described has actually happened. What would be the consequences?

In the space provided, write down all of the things that might happen if each situation were to come true. If you need more space for your answers, please turn the page over and continue on the back. Write your responses as rapidly as you can. After time is called, finish any incomplete sentences, and turn the page. Begin immediately with the next problem.

There are no rules for responding to this test, so make up your own rules as you go along. Don't worry about spelling, grammar, and the like, but try to be as creative as possible.

There are no right or wrong answers.

You will be given 5 minutes for each problem.

### Items:

- A. What would be the consequences, if people fell in love with a different person every other day?
- B. What would be the consequences, if people could detect every emotion that others were feeling?
- C. What would be the consequences, if people could only experience positive emotions in the morning and negative emotions in the afternoon?
- D. What would be the consequences, if whenever people fell in love, they developed a terrible odor that became worse as their love got stronger?

Emotional Consequences Test  
Examples of Responses

- A. What would be the consequences, if people fell in love with a different person every other day?

Good: It would be positive, because people would run soon run out of people to love, so racial integration would occur everywhere.

People need commitment, so there would be an emotion stronger than love.

Poor: There would be no lasting relationships.

The population would increase.

- B. What would be the consequences, if people could detect every emotion that others were feeling?

Good: Mood rings would be unnecessary.

We may better understand people of other cultures as language would no longer be an obstacle.

Poor: Guilt would be hard to hide.

It would be embarrassing.

- C. What would be the consequences, if people could only experience positive emotions in the morning and negative emotions in the afternoon?

Good: Biological clocks would be reset so that everyone would wake up at midnight and be asleep again by afternoon.

The sign on the door at the local mental health clinic would say:

Office Hours: Morning--Mania  
Afternoon--Depression  
Bipolar patients may visit us twice daily

Poor: People wouldn't be happy in the morning.

There would be fights in the afternoon.

D. What would be the consequences, if whenever people fell in love, they developed a terrible odor that became worse as their love got stronger?

Good: We would find out if "love at first sight" really exists.

The tunnel of love would be dreadful--it would probably have to be shortened.

Poor: People would wear more perfume.

The world would stink.

APPENDIX C: INSTRUCTIONS TO JUDGES



Emotional and Cognitive Consequences Tests  
Instructions to Judges

Fluency:

Fluency is the ability to produce a large number of ideas with words. In general, judges should count the number of relevant, nonrepeated responses to an item. In some responses, two or more separate ideas may be represented in one sentence.

Flexibility:

Flexibility is the ability to produce a variety of kinds of ideas, to shift from one approach to another, or to use a variety of strategies. A low flexibility score is reflected in the tendency to stick to a narrow range of responses, which might result from a rigid pattern of thinking, a narrow range of information and/or experiences, limited intellectual and/or emotional capacity, and/or low motivation. Judges should count the number of different categories or strategies represented in the responses.

Creativity:

Creativity is the ability to produce ideas that are away from the obvious, commonplace, banal, or established. The person who achieves a high creativity score has a great deal of intellectual energy and may be perceived as rather nonconforming. He or she is able to make mental leaps, but is not erratic or impulsive.



### Novelty:

How unusual is the emotional experience? How frequently has the story theme, or some variation thereof, appeared in response to a particular item? When rating this dimension, judges should keep in mind that only the uniqueness of the item should be considered, without regard for the overall quality of the response.

### Integration:

Do all three emotions appear in the story? Is there a heavy reliance on one or two versus all three? Do they seem to blend into one emotion; i.e., is there a "holistic" feel to the emotion triad in the story?

In some stories, the emotions may seem independent of one another, even though all three appear. For example, each emotion might appear to be related to a different phase of the story (sequential representation). This is often, but not always, the case when an emotion is introduced into the story via a change of events. If this happens, you should judge whether the other emotions have become irrelevant, or if they blend into the new situation. For example, a man who is lonely and angry, because his girlfriend left him, then joyful because she returns, has not experienced an emotional mixture.

### Adaptiveness:

Does the emotional experience offer a uniquely adaptive response to the situation? Is the situation described in the story one in which the emotions would not typically be experienced, but nonetheless "fit" in a pleasing way? Do the emotions represent an optimal response to the situation?

After reading the story, think about the outcome for the individual as a function of the emotions experienced. Did the person correct or solve a personal dilemma through experiencing the situation in this way? Or, is he now motivated to do so? Some stories do not involve concrete problems, and thus should be judged according to how the emotions might have enhanced the person's experience of the situation.

Creativity:

Creativity is the ability to produce ideas that are away from the obvious, commonplace, banal, or established. The person who achieves a high creativity score has a great deal of intellectual energy and may be perceived as rather nonconforming. He or she is able to make mental leaps, but is not erratic or impulsive.

\* \* \* \* \*

APPENDIX D: CONSEQUENCES TESTS CORRELATIONS

Relationship of Emotional Consequences Test  
Raw Scores to Other Measures of Creativity

Other Measures	Emotional Consequences Test		
	Fluency	Flexibility	Creativity
<u>Emotional Creativity</u>			
Emotional Creativity Inventory			
Females	.21	.32**	.26*
Males	.30*	.33*	.15
Total	.31**	.36***	.26**
Emotional Triads Test			
Females	.16	.23	.36***
Males	.31*	.28	.23
Total	.25**	.27**	.31**
<u>Cognitive Creativity</u>			
Cognitive Creativity Inventory			
Females	.13	.22	.18
Males	.29	.35*	.40**
Total	.21*	.29**	.29**
Cognitive Consequences Test			
Females	.73***	.70***	.49***
Males	.58***	.66***	.70***
Total	.68***	.69***	.58***

Note. Females,  $n = 58$ ; males,  $n = 42$ .

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; two-tailed

Relationship of Emotional Consequences Test  
Raw Scores to Cognitive Ability Measures

Cognitive Ability Measures	Emotional Consequences Test		
	Fluency	Flexibility	Creativity
<hr/>			
GPA			
Females	.09	.10	.06
Males	.24	.20	.37*
Total	.18	.16	.24*
<hr/>			
SAT Mathematics Score			
Females	-.01	-.05	.06
Males	-.16	-.05	.07
Total	-.14	-.09	.00
SAT Verbal Score			
Females	.12	.09	.17
Males	.00	.14	.28
Total	.07	.12	.23*
<hr/>			
Intelligence Inventory			
Females	.06	.06	.05
Males	.01	.10	.23
Total	.01	.05	.10
Wisdom Inventory			
Females	-.02	.08	.18
Males	.22	.29	.27
Total	.12	.19	.25*

Note. Females,  $n = 58$ ; males,  $n = 42$ .

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; two-tailed

Relationship of Emotional Consequences Test  
Raw Scores to Emotional Ability Measures

Emotional Ability Measures	Emotional Consequences Test		
	Fluency	Flexibility	Creativity
Affective Communication Test			
Females	.10	.07	.02
Males	.24	.27	.06
Total	.20*	.18	.08

Affect Intensity Measure

Functional Subscale

Females	.35**	.29*	.20
Males	.14	.12	-.21
Total	.32***	.26**	.08

Dysfunctional Subscale

Females	.12	.07	.00
Males	-.14	-.17	-.45**
Total	.10	.04	-.10

Total Score

Females	.21	.14	.04
Males	-.01	.01	-.33*
Total	.20*	.15	-.03

Note. Females,  $n = 58$ ; males,  $n = 42$ .

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; two-tailed



Relationship of Cognitive Consequences Test  
Raw Scores to Other Measures of Creativity

Other Measures	<u>Cognitive Consequences Test</u>		
	Fluency	Flexibility	Creativity
<u>Emotional Creativity</u>			
Emotional Creativity Inventory			
Females	.06	.10	.03
Males	.34*	.28	.16
Total	.21*	.22*	.11
Emotional Triads Test			
Females	.02	.05	.24
Males	.52***	.50***	.34*
Total	.25**	.27**	.30**
Emotional Consequences Test			
Females	.57***	.63***	.61***
Males	.75***	.75***	.64***
Total	.65***	.69***	.63***
<u>Cognitive Creativity</u>			
Cognitive Creativity Inventory			
Females	.17	.22	.23
Males	.49***	.45**	.54***
Total	.30**	.32***	.36***

Note. Females,  $n = 58$ ; males,  $n = 42$ .

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; two-tailed

Relationship of Cognitive Consequences Test  
Raw Scores to Cognitive Ability Measures

Cognitive Ability Measures	Cognitive Consequences Test		
	Fluency	Flexibility	Creativity
<hr/>			
GPA			
Females	.13	.07	.07
Males	.32*	.25	.35*
Total	.23*	.17	.21*
<hr/>			
SAT Mathematics Score			
Females	.09	.06	.01
Males	-.07	.01	.17
Total	-.03	.00	.06
SAT Verbal Score			
Females	.05	.16	.25
Males	.10	.19	.33*
Total	.08	.18	.29**
<hr/>			
Intelligence Inventory			
Females	.16	.15	.17
Males	.30	.27	.41**
Total	.18	.17	.25**
Wisdom Inventory			
Females	.03	.03	-.06
Males	.37*	.36*	.35*
Total	.18	.19	.14

Note. Females,  $n = 58$ ; males,  $n = 42$ .

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; two-tailed

Relationship of Cognitive Consequences Test  
Raw Scores to Emotional Ability Measures

Emotional Ability Measures	Cognitive Consequences Test		
	Fluency	Flexibility	Creativity
<hr/>			
Affective Communication Test			
Females	.12	.12	.06
Males	.26	.29	.07
Total	.20*	.21*	.09
<hr/>			
Affect Intensity Measure			
Functional Subscale			
Females	.18	.21	.09
Males	.16	.05	-.19
Total	.22*	.19	.00
Dysfunctional Subscale			
Females	-.01	.04	-.03
Males	-.26	-.41**	-.54***
Total	-.03	-.06	-.18
Total Score			
Females	.07	.14	.05
Males	-.07	-.17	-.42**
Total	.08	.08	-.08

Note. Females,  $n = 58$ ; males,  $n = 42$ .

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ ; two-tailed

APPENDIX E: EMOTIONAL TRIADS TEST

## Emotional Triads Test

### Instructions:

This is a creativity test that examines the variety of ways in which people experience emotions. People vary greatly in the range and intensity of emotions that they experience. For example, at one end, we might find people like Mr. Spock, who couldn't experience any emotions, and at the other end, we might find people who are highly emotional and experience a wide range of emotions. Other people might be considered "emotionally creative," because they have unusual emotional experiences. That is, they react to situations with emotions that are different from the typical emotions that most people would experience, but that nevertheless allow them to cope effectively with the situation. These emotional responses might result from unusual combinations or blends of familiar emotions; that is, emotions that do not ordinarily occur together.

Many emotional combinations are not unusual and have been given labels. For example, disappointment is a mixture of surprise and sadness, and contempt is a mixture of disgust and anger. These combinations are referred to as "mixtures" or "blends," because the emotions occur simultaneously. That is, the emotions are not experienced individually, one after another; but instead, they are experienced together at the same time. Therefore, a person who is both surprised and sad about something is said to feel disappointed.

We are interested in finding out what unusual combinations of emotions feel like. However, because we do not have labels for unusual emotional combinations or blends, it is often hard to describe these experiences. Therefore, we will present you with a combination of three emotions that do not ordinarily occur together and ask you to write a story in which you experience these emotions.

There are no rules for making up your story, but we will be looking at: (1) how novel or original the emotional experience is, (2) how thoroughly you develop the emotions in your story, and (3) how well the three emotions are represented as simultaneous (rather than sequential) emotions in your story.

For example, the following is a shortened version of a story about an emotional experience in which the person feels sad, impatient, and trusting:

"I am about to die in my sleep and I can feel the lifeforce draining away. I sadly reflect on the faces of those who I will not see again...I am tired of breathing, impatient to see the after, and I know I'll be missed. My significant others are crying tears of melancholy. I relax all the muscles in my body and allow myself to approach the point of no return. Suddenly, a

slow sucking force pulls me into an abyss of warmth that is the end. The warmth comforts me and fills me with trust, and I surrender to my own mortality."

In writing your stories, try to be as creative as possible. You can imagine yourself in whatever kind of situation that comes to mind when you think about the three emotions, but remember to emphasize the emotional aspects of your story.

Don't worry about spelling, grammar, or writing style. There are four emotional combinations, and you will be given 7 minutes to write each story. If you are still writing when time is called, finish as quickly as you can before turning to the next page.

Items:

- A. Imagine that you are having an emotional experience in which you simultaneously (at the same time) feel: serene, bewildered, and impulsive. Write a story that describes the situation, your actions, and how these emotions blend together.

SERENE / BEWILDERED / IMPULSIVE

- B. Imagine that you are having an emotional experience in which you simultaneously (at the same time) feel: affectionate, disgusted, and hopeful. Write a story that describes the situation, your actions, and how these emotions blend together.

AFFECTIONATE / DISGUSTED / HOPEFUL

- C. Imagine that you are having an emotional experience in which you simultaneously (at the same time) feel: lonely, angry, and joyful. Write a story that describes the situation, your actions, and how these emotions blend together.

LONELY / ANGRY / JOYFUL

- D. Imagine that you are having an emotional experience in which you simultaneously (at the same time) feel: embarrassed, jealous, and amused. Write a story that describes the situation, your actions, and how these emotions blend together.

EMBARRASSED / JEALOUS / AMUSED

Emotional Triads Test  
Examples of Responses

A) LONELY / ANGRY / JOYFUL

POOR:

I am sitting in my room alone and lonely because all my friends are out. I'm pretty angry at them because they did not give me a call. But I get up and open the fridge and see a cold case of Bud. By the time I swill 8 beers I am in a joyful mood, but I am still pissed at my friends.

I was supposed to meet my friends here. I wonder what happened to those assholes. This seat is so comfortable. Looking at how the sun reflects off the waves like that reminds me of a time when we had when I was real young, I miss those days. I love it when the air smells like this--clean, warm. I could sit here forever. But what am I going to do to get home.

I just broke up with my girlfriend and was sitting alone listening to a bootleg at the Grateful Dead. It was a show I went to see; a good show, I might add. I still couldn't believe that she dumped me.

GOOD:

Driving on never to return...I wish. Another family fight, my typical reaction, get in the car and take off. Riding into the summer night air, mild and damp, makes me glad to be in motion, the breeze coming through the windows produces sensations of joy...I'm angry as I was chased out of my own home. Things will be humid, intense, and static upon my return. And I'm lonely as I drive alone with my broodings, angry that it is I who must go into the night...I'm better off this way. The air is so pleasant in the form of a breeze. It's a lonely feeling yet so peaceful it brings its own joy...and so I run in cycles until these cycles wear me down and I yield to my weariness and head for home.

As I approach my driveway a wave of loneliness sweeps over me and clutches at my stomach, I'm going home to an empty apartment where six months ago Stan would have been there to greet me. Why did he have to die before I finished school? We were "in this" together. I never would have started school without him and his constant support and encouragement. As I settle into my favorite chair and see Stan as he had been in his favorite chair, I chuckle to him, "Oh, I don't blame you, those math homework sessions would send anybody to the beyond. You got out of it early, but don't go too far--I still need you." And I do feel his presence.

"It's my turn to see what I can see, I hope you'll understand, this time's just for me." I sing out loud to the black night sky and the yellow glowing silhouette of Boston across the bay. I strongly throw pebble after pebble into the night black harbor almost hypnotized and unaware of what goes on in my mind. I'm all alone, I think. Just me and the woods and the water and no one. And a tear escapes. I wipe it away angrily and stand up. I am alone, by myself, with myself, and for myself. I don't need him. I don't need them. Any of them at all. I have me. I can do anything I want and not be tied to them and their routines. Who needs them, not me I shout at the empty sky. I can do it all, all by myself. I'll show them, I'll tell them! But who will I tell--who will care?

B) AFFECTIONATE / DISGUSTED / HOPEFUL

POOR:

I can't believe that the plane my girlfriend is on is going to be three hours late. How could that happen? These planes are horrible. I hate waiting around. "Oh, what did the desk lady say?" The plane might be arriving any minute. Wow, I didn't think she could have gotten the planes mixed up. "Hey, there it is." And now my girlfriend is walking closer to me. "Hi babe, I missed you."

I met a girl recently who I really wanted to go out with. She was pretty and nice. She seemed to be very affectionate. I hoped I could go out with her. I was disgusted to find out that she was seeing someone else.

I am on the way home from UMASS with a very good-looking girl from my town. I feel affection toward her because I like her looks and personality. While I am looking at her, she tells me about how alcohol has been banned from spring concerts for no good reason. She also tells me that students are planning protests and building takeovers in response to the new policy. Although the new policy disgusts me, I am hopeful that the students will have it overturned.

As the beautiful bombshell from down the street and I snuggle up on the couch watching a good movie, the atmosphere rapidly changes. Mrs. Cockroach, her mother, comes home and needs her to go help her change the tire on the station wagon, because she works in an automotive garage and knows how to do it. As I head for the door to go home, she tells me she'd like to do it again and I agree with her one-hundred percent.

GOOD:

While working at the city's home for mentally disturbed children, I find myself drawn to a particular little girl named Anne. She is autistic, yet somewhere beneath those thin feathered curls, I know



lies a smart, affectionate person. I feel myself drawn to her, like a big sister, and I watch everyday for signs that she is starting to respond. After lunch, she gets sick, and can only sit there in her own vomit. I must clean her up. It's not pleasant, she smells. As I clean her, I take special care to wash her hair. I know that some day she will be a beauty.

In the help center, we see a lot of people come and go, every person with a unique set of problems, every person needing help, every person--you want to help. Today, I picked up a toddler. She was two or three, her face was covered with dirt and her clothes were a size too small. She had outgrown them, but her family couldn't afford to replace them. As I lifted her slight frame to give her a hug, just to let her know I cared, I could feel her tiny bones protruding. I shuddered in disgust. I proceeded to wash her little hands and wipe her dirty little face. And I looked into her warm, dark eyes, I felt as though the warmth of her glance was a sign that she would survive. My best friend has been in a car accident and I can't wait to see her. All I know is that she's gone through the windshield after a head-on collision with an ambulance. I am deeply concerned, I know that she needs my support in her time of pain. It is three days after the accident, and she's allowed other visitors besides family. All I've been told is that her face had been cut badly. I enter the room alone and cross over to the bedside. Her face is badly mutilated, stitches spread over her entire face. I take her hand and kiss it, as I try to hold back my thoughts about the ugly appearance of her once beautiful face. I want it to be beautiful again, and I am hopeful that it will one day be as it was before. I smile at her and she tries to smile back as I continue to rub my hand over hers.

While walking down West 42nd Street in New York City, I came across a woman who caught my interest. I felt affection for her because she resembled my grandmother greatly. She needed a quarter to enable her to purchase a hot dog and coffee. As I was taking out my wallet to help her out a little with a five dollar bill she snatched my purse and ran off. I was amazingly surprised at the speed of her pace, but most of all disgusted that a woman who seemed in such dire need with a look of pure amiability and innocence on her face could do such a thing. I caught up with her and grabbed my purse back, she willfully surrendered it to me and began sobbing.

How did he think this up from his position? My brother won't admit his lies even when the family tells him we know he's lying. He's a dropout, a chronic liar, and he's working in a 24-hour foodmart. It's my niece's birthday, and he got her a windup toy pig. She pushed her new dolls aside and grabbed the pig. You wind it up and it moves and squeals. To watch her play with it and to think of him...he's a genius...I watch the pig and I'm disgusted with him for his inability to organize his life, but he's his own person...I'm hopeful that something will sweep him out of the dimestore and into the spotlight he deserves...he's an actor, you know...

C) EMBARRASSED / JEALOUS / AMUSED

POOR:

For unknown reasons, I enter a local bar. I have already had a few beers when a gorgeous blond walks up to the bar and orders a drink. I struggle to find a corny line to introduce myself, and it works. She sits down and we start to talk. Suddenly, just as things were getting good, a jock walks up and asks her to dance. She quickly agrees and says goodbye. I am extremely jealous of this thug, and I swear revenge. I order a pitcher of beer, and walk up to him on the dance floor and pour it over his head. The crowd forms a circle around us and I wonder what to do. Suddenly, the blond starts laughing and points to my crotch. My fly is unzipped and the crowd roars with laughter as I zip it up. I am embarrassed, but since the jock decided I'd had enough abuse I can laugh at it.

I'm at the beach with Jim and his girlfriend. They're both all nice and tanned--beautiful beach people. They look at me and laugh at me and my sunburn. I blush, but they can't tell because I'm burnt. She should be more interested in me than in Jim. Once you take away his tan, there is not much to him. It even amuses me how their relationship stays together since Jim is so shallow.

Mike was the object of the practical joke. The bucket of water fell on him when he opened the door. As amusing as I found this, I was also embarrassed by it when I remembered how I felt when I was the subject of a practical joke. But as I look at Mike and notice all the attention he is getting, I feel jealous that I had not received as much attention during my practical joke nor was I receiving as much attention now.

Her face is so beautiful as the dark liquid falls mercilessly upon her yellow dress. A hole forms in my stomach as I look, but unwittingly, a smile slips onto my lips.

GOOD:

Thought I had my act down, this guy struts in and plays three songs and he's a sensation, whereas I played five and got a dead response. I'm embarrassed for thinking I was king musician and amused to see I'm not, and I'm jealous of the reaction this guy got...and yet I'm amused all the more, because while this guy has technical abilities with his instrument, he has no creativity with the thing...I know I'm better amused at myself for maintaining this...and more amused to see that the very reaction of which I am jealous confirms this belief...I'd like to try this act again...I should forget the comparisons and let things lie.

I hear all of the fuss about Ft. Lauderdale at spring break time, and I experience a mix of emotions. I am embarrassed for those people who parade around with no clothes on (practically get arrested) and are drunk for two weeks straight. It is demeaning to the student population (or should I say the "human population"). At the same time, I wish I had a little more flamboyant side to me, as then I wouldn't be so stuffy when it comes to things such as this. And I am amused at the charades that go on there, and wish that some day I can switch my personality (just for a day) and see what it would feel like to be a person with no morals.

Auditioning for community music theatre productions is always quite an experience. I have such incredible respect for many of the people involved, yet at times I must laugh to myself and wonder if they know that I can sometimes see right through them. Oh, to have the talent that I might be admired as I admire them, but always my performance is fatally flawed, although they say "good job" or worse, "thank you, we'll be in touch." To dance, to sing, to fly through the stars without lying awake until dawn repeating and repeating in my mind every obvious falter. I shall never, not ever, have what it takes. And I pause. In a moment of what I hope is honest reflection, I hope I am honestly laughing at myself.

D) SERENE / BEWILDERED / IMPULSIVE

POOR:

I am sitting in a field with high grass, alone with no one visible for as far as the eye could see. I am serene. But I am also bewildered when I discover I do not know where I am nor how I got here. I impulsively and frantically run in every direction looking for any sign of human life. After running for about five minutes, and after working up a great sweat, I came across a Coke machine. I buy myself a Coke and subsequently drink it while contemplating my insane-like actions.

I am sitting at the beach very peacefully and drinking a few beers, when all of a sudden some little faggot comes up and kicks sand on me and that just totally bewildered me. Impulsively and calmly, I got up and beat the crap out of the punk, then sat back down and popped open another brewsky.

I was down in Atlantic City. It was my first time gambling, and I didn't really understand how to play. I was at the craps table and all of a sudden I got the urge to put everything down on number 7. And I won a million dollars and I now go down every weekend.

You are sitting very comfortably in the warm sand at the beach. You see a strange object floating in the water. You want to go see what it is, but you don't really want to get up.

GOOD:

The clouds are few, the sky is clear. I'm at the top of the cliff. It's real peaceful up here. Suddenly, I want to jump, I don't know why, I just want to. Calmly, I look down at what would be my unquestioned doom. It looks so peaceful; warm and friendly. But why, why do I want to dive into the hands of the grim reaper? What does this mean? I hesitate, then motion to jump, something strange pulls me back. It is the peacefulness of the cliff. I can't destroy that peacefulness. The wind feels like velvet against my skin as I slowly walk away and shake my head. Why?

The woods are so peaceful and quiet. A great place to think out problems. Just why does she have to be sick anyway? What is going to happen to her? I don't know what to think anymore. I feel myself sinking into the peacefulness and longing of the woods. How I love to spend time here relaxing, being by myself, thinking. Yet, there is this longing deep in my heart just to run to her and tell her how special she is to me. Just let my feelings open up and spill out. No more hiding and wondering and guessing. But, is that what would be best for her? The woods are telling me to go; she needs to hear all that, they say. I don't want to leave this protective peace, though, I am not ready yet. Just let me sit in its arms and think. No, tomorrow may not give me this chance. Why can't I think this through? I am at my mother's funeral. She has died after a long illness and now after all those years of suffering, the pain is gone. I am standing amidst a group of people, all of whom I can easily and quickly imagine being with my mother at some point in time. It seems odd that she is not visually present in the room with us. And I wonder how I should act now in front of these people...how do they know me, what do they associate me with? My mother? The poor daughter of a dead mother? Or should I feel strong and bold now? Now that it is over, I can be anyone I want to be.

APPENDIX F: COGNITIVE CREATIVITY INVENTORY



- 92. I follow my gut feelings in making decisions after weighing the pros and cons.
- 95. I am unable to change directions and use another procedure. (R)
- 99. I do not question societal norms, truisms, and assumptions. (R)
- 102. I am perceptive.
- 105. I am not willing to take a stand. (R)
- 107. I see attainable goals and accomplish them.
- 110. I like to be complimented on my work.
- 113. I am energetic.
- 115. I do not have a good sense of humor. (R)
- 120. I attach importance to well-presented ideas.
- 121. I am not intuitive. (R)

Note: Items were interspersed with items from the Emotional Creativity Inventory, the Intelligence Scale, and the Wisdom Scale. Item numbers indicate the item's actual position within the inclusive scale.

APPENDIX G: COGNITIVE CONSEQUENCES TEST



## Cognitive Consequences Test

### Instructions:

This test will give you the opportunity to think creatively by presenting you with problems for which you will be able to think of many possible solutions. On the following pages, you will find eight improbable situations. Imagine that each of the situations described has actually happened. What would be the consequences?

In the space provided, write down all of the things that might happen if each situation were to come true. If you need more space for your answers, please turn the page over and continue on the back. Write your responses as rapidly as you can. After time is called, finish any incomplete sentences, and turn the page. Begin immediately with the next problem.

There are no rules for responding to this test, so make up your own rules as you go along. Don't worry about spelling, grammar, and the like, but try to be as creative as possible.

There are no right or wrong answers.

You will be given 5 minutes for each problem.

### Items:

- A. What would be the consequences, if human beings could become invisible at will?
- B. What would be the consequences, if a hole could be bored through the earth?
- C. What would be the consequences, if the language of birds and animals could be understood by human beings?
- D. What would be the consequences, if human beings could live forever on earth?

Cognitive Consequences Test  
Examples of Responses

A. What would be the consequences, if human beings could become invisible at will?

Good: The human race would disappear from time to time.

Shy people would never be seen--they would disappear every time they got embarrassed.

Poor: People would bump into each other.

Crime would increase.

B. What would be the consequences, if a hole could be bored through the earth?

Good: We could put the earth on a giant paper towel holder, and if everyone ran in the same direction, we could change the days.

A diplomatic subway system (for government purposes only) could be built, thus giving the term "shuttle diplomacy" new meaning.

Poor: People would fall in.

We could travel to the other side of the world.

C. What would be the consequences, if the language of birds and animals could be understood by human beings?

Good: Apes could tell us what the earth was like before humans evolved.

We wouldn't want to use them for commodities, like food or clothes, so we would have to control their population--they would become a drain on society.

Poor: We could ask them what they wanted to eat.

We could talk to them.

D. What would be the consequences, if human beings could live forever on earth?

Good: The death penalty would seem much harsher.

There would be more light pollution (bad for astronomers).

Poor: The earth would be crowded.

There would be a lot of old people.

APPENDIX H: AFFECT INTENSITY MEASURE  
AND SUBSCALES



17. The sight of someone who is hurt badly affects me strongly.
18. When I'm feeling well, it's easy for me to go from being in a good mood to being really joyful.
19. "Calm and cool" could easily describe me.
20. When I'm happy I feel like I'm bursting with joy.
21. Seeing a picture of some violent car accident in a newspaper makes me feel sick to my stomach.
22. When I'm happy, I feel very energetic.
23. When I receive an award, I become overjoyed.
24. When I succeed at something, my reaction is calm contentment.
25. When I do something wrong, I have strong feelings of shame and guilt.
26. I can remain calm even on the most trying days.
27. When things are going good, I feel "on top of the world."
28. When I get angry, it's easy for me to still be rational and not overreact.
29. When I know I have done something very well, I feel relaxed and content rather than excited and elated.
30. When I feel anxiety, it is normally very strong.
31. My negative moods are mild in intensity.
32. When I am excited over something, I want to share my feelings with everyone.
33. When I feel happiness, it is a quiet type of contentment.
34. My friends would probably say I'm a tense or "high-strung" person.
35. When I'm happy, I bubble over with energy.
36. When I feel guilty, this emotion is quite strong.
37. I would characterize my happy moods as closer to contentment than to joy.
38. When someone compliments me, I get so happy I could "burst."

39. When I am nervous, I get shaky all over.
40. When I am happy, the feeling is more like contentment and inner calm than one of exhilaration and excitement.









APPENDIX I: AIM - NEUTRAL SUBSCALE CORRELATIONS

Relationship of the Neutral Subscale of the  
Affect Intensity Measure to the  
Emotional Creativity Measures

Creativity Test	Neutral Subscale		
	Females	Males	Total
Emotional Creativity Inventory	.10	.24	.23*
Emotional Consequences Test	-.01	-.04	.04
Emotional Triads Test	-.11	-.06	-.05
Emotional Creativity Composite	-.08	-.06	-.01

Note. Females,  $n = 58$ ; males,  $n = 42$ .

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$

APPENDIX J: AFFECTIVE COMMUNICATION TEST



APPENDIX K: INTELLIGENCE INVENTORY





119. I do not have a good command of language. (R)

122. I am able to integrate information.

Note: Items were interspersed with items from the Emotional Creativity Inventory, the General Creativity Scale, and the Wisdom Scale. Item numbers indicate the item's actual position within the inclusive scale.

APPENDIX L: SOCIAL DESIRABILITY SCALE

## Social Desirability Scale

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you personally. Indicate your answers on the opscan sheet by filling in the circle marked 0 for true, and 1 for false.

	<u>True</u>	<u>False</u>
1. Before voting, I thoroughly investigate the qualifications of all the candidates.	0	1
2. I never hesitate to go out of my way to help someone in trouble.	0	1
3. It is sometimes hard for me to go on with my work if I am not encouraged.	0	1
4. I have never intensely disliked anyone.	0	1
5. On occasion, I have had doubts about my ability to succeed in life.	0	1
6. I sometimes feel resentful when I don't get my way.	0	1
7. I am always careful about my manner of dress.	0	1
8. My table manners at home are as good as when I eat out in a restaurant.	0	1
9. If I could get into a movie without paying for it and be sure I was not seen, I would probably do it.	0	1
10. On a few occasions, I have given up doing something because I thought too little of my ability.	0	1
11. I like to gossip at times.	0	1
12. There have been times when I felt like rebelling against people in authority even though I knew they were right.	0	1
13. No matter who I'm talking to, I'm always a good listener.	0	1

- |  |   |   |
|--|---|---|
| 14. I can remember "playing sick" to get out of something.                                   | 0 | 1 |
| 15. There have been occasions when I took advantage of someone.                              | 0 | 1 |
| 16. I'm always willing to admit it when I make a mistake.                                    | 0 | 1 |
| 17. I always try to practice what I preach.  | 0 | 1 |
| 18. I don't find it particularly difficult to get along with loud mouthed, obnoxious people. | 0 | 1 |

APPENDIX M: WISDOM SCALE



97. I change my mind on the basis of experience.
101. I can offer solutions that are on the side of right and truth.
104. I am able to see through things--read between the lines.
109. I am inexperienced. (R)

Note: Items were interspersed with items from the Emotional Creativity Inventory, the General Creativity Scale and the Intelligence Scale. Item numbers indicate the item's actual position within the inclusive scale.

APPENDIX N: INTERCORRELATIONS AMONG ALL VARIABLES



Intercorrelations Among All Variables - Total Sample

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Emotional Creativity Inventory	--													
2. Emotional Conseq.	.35***	--												
3. Emotional Triads	.27**	.31**	--											
4. Emotional Creativity Composite	.39***	--	--	--										
5. Cognitive Creativity Inventory	.54***	.28**	.31**	.36***	--									
6. Cognitive Conseq.	.17	.66***	.29**	.58***	.33***	--								
7. ADM-Functional	.58***	.20*	.18	.24*	.24*	.13	--							
8. ADM-Dysfunctional	.32***	.00	-.08	-.05	-.09	-.09	.61***	--						
9. ACT	.47***	.14	.15	.18	.42***	.15	.54***	.38***	--					
10. GPA (N = 98)	.26**	.21*	.22*	.26**	.21*	.18	-.06	-.05	.10	--				
11. SAT-Math (N = 93)	-.21*	-.06	.17	.07	.13	.03	-.12	-.27**	-.13	.13	--			
12. SAT-Verbal (N = 93)	.04	.20	.33***	.32**	.17	.24*	-.05	-.17	-.05	.11	.38***	--		
13. Intelligence Inv.	.31***	.08	.35***	.26**	.72***	.22*	.16	-.24**	.20	.21*	.40***	.29**	--	
14. Wisdom Inv.	.54***	.23*	.29**	.32***	.65***	.16	.29**	-.10	.30**	.21*	.18	.13	.62***	--

\*p ≤ .05; \*\*p < .01; \*\*\*p ≤ .001; N = 100, except where noted

Intercorrelations Among All Variables - Females

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Emotional Creativity Inventory	--													
2. Emotional Conseq.	.33**	--												
3. Emotional Triads	.17	.34**	--											
4. Emotional Creativity Composite	.31*	--	--	--										
5. Cognitive Creativity Inventory	.46***	.24	.12	.22	--									
6. Cognitive Conseq.	.09	.62***	.13	.46***	.28*	--								
7. AIM-Functional	.47***	.26*	.04	.18	.13	.19	--							
8. AIM-Dysfunctional	.20	.02	-.04	-.01	-.15	.04	.56***	--						
9. ACT	.34**	.05	.00	.03	.49***	.10	.47***	.30*	--					
10. GPA (N = 57)	.06	.07	.17	.15	.02	.07	-.17	-.13	-.01	--				
11. SAT-Math (N = 53)	-.23	.00	.32*	.19	.08	.04	-.12	-.08	.00	.28*	--			
12. SAT-Verbal (N = 53)	.01	.17	.29*	.27*	-.03	.22	-.04	-.03	.08	.15	.27*	--		
13. Intelligence Inv.	.37**	.04	.31*	.21	.72***	.16	.15	-.24	.30*	.17	.26	.04	--	
14. Wisdom Inv.	.45***	.13	.07	.12	.64***	-.04	.05	-.29*	.26	.08	.17	.00	.62***	--

\*p ≤ .05; \*\*p < .01; \*\*\*p ≤ .001; N = 58, except where noted

Intercorrelations Among All Variables - Males

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Emotional Creativity Inventory	--													
2. Emotional Conseq.	.27	--												
3. Emotional Triads	.32*	.24	--											
4. Emotional Creativity Composite	.37*	--	--	--										
5. Cognitive Creativity Inventory	.68***	.32*	.51***	.53***	--									
6. Cognitive Conseq.	.22	.71***	.46**	.74***	.38**	--								
7. AIM-Functional	.58***	-.01	.24	.15	.38**	-.05	--							
8. AIM-Dysfunctional	.23	-.28	-.27	-.35*	-.06	-.48***	.53***	--						
9. ACT	.55***	.17	.27	.28	.32*	.18	.55***	.36*	--					
10. GPA (N = 41)	.40**	.30	.24	.34*	.41**	.29	-.06	-.09	.16	--				
11. SAT-Math (N = 40)	-.02	.00	.15	.09	.26	.08	.08	-.30	-.12	.09	--			
12. SAT-Verbal (N = 40)	.03	.23	.36*	.37*	.36*	.26	-.10	-.41	-.23	.07	.53***	--		
13. Intelligence Inv.	.41**	.19	.45**	.41**	.76***	.35*	.30	-.18	.14	.30	.55***	.58***	--	
14. Wisdom Inv.	.61***	.29	.46**	.48***	.67***	.40**	.47**	-.01	.30	.29	.33*	.23	.71***	--

\*p ≤ .05; \*\*p < .01; \*\*\*p ≤ .001; N = 42, except where noted

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