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Cognitive and Affective Dimensions of Creativity Among Artists: Assessment of Creativity Stereotypes

by

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ABSTRACT

The study explored the credibility of three creativity stereotypes: depression, affective intensity, and intelligence. Third and fourth year University of Calgary students (n=60), from the Departments of Art, Drama, and Dance, participated. Due to skepticism regarding general measures of creativity, the construct validity of the Creative Personality Scale was assessed; since the sample mean exceeded the population mean, the Creative Personality Scale was deemed satisfactory. The depression measure of the BDI, the affective intensity measure of the AIM, and the intelligence measure of the MAB were used as independent variables. The Creative Personality Scale and the Origence and Intellectence measures of the ACL were used as dependent creativity variables. The variables were used in two canonical analyses and three stepwise multiple regression analyses. Since the same significant variables were identified by both types of analysis, multicollinearity was not deemed a confounding influence; therefore, the results of the multiple regression analyses became the focus of discussion. Regardless of how creativity was defined, the affective intensity stereotype was not supported by statistical significance. With Creative Personality, the intelligence stereotype was supported. With Intellectence, none of the stereotypes were supported. With Origence, the depression stereotype was supported. Since the study was the first to directly evaluate creativity stereotypes, the results should only be considered the first step in discerning the credibility of the stereotypes; further research is required.

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To Kenneth Campbell

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Chapter One

Introduction

Problem

A review of creativity literature indicates that there are traditional assumptions regarding the personality of creative people. Early on, during the dawn of contemporary psychological thought, the artist was deemed to be emotionally unstable due to the prevalence of mental disease among prominent artists such as Vincent Van Gogh and Emily Dickinson (Schubert & Biondi, 1975). In accordance, early twentieth century psychoanalytic theorists, including Lombroso (1891), Nisbet (1900), Hyslop (1925), Ellis (1926), and Lange-Eichbaum (1931), suggest a positive relationship between abnormal personality and genius, intelligent, or creative individuals.

In 1900, Freud (1959/1900) observed that artists have a tendency to be introverted. Freud also concluded that introversion is a passive trait that frequently leads to depression; therefore, Freud's theory promoted a stereotype, which related artists with depression. The depressed artist stereotype seems to be a popular one. More has been written about the subjective experience of disturbed mood in the artist than probably any other group of sufferers (Whybrow, 1994).

Interestingly though, contemporary research has not been successful at confirming a positive relationship between creativity and depression. In fact, research has led to seemingly discordant results. While a disproportional, larger number of highly creative individuals are diagnosed with clinical depression

(Slaby, 1992), it has also been established that when creative individuals are treated for depression, their creative productivity improves (Whybrow, 1994).

Depression research tends to investigate the incidence of clinical depression among artists rather than measuring degrees of association between depression and creativity (Slaby, 1992); therefore, the stereotype begins with an assumption of mental illness rather than studying "normal" functioning among highly creative individuals.

Historically, emotion has been presented as the heart of the creative process (Collingwood, 1938). Freud's (1949/1908) analyses of artists resulted in his belief that creativity was a form of sublimination utilized to manage intense emotions that artists had no other way of expressing; therefore, Freud's view-point developed a stereotype, which suggests that artists are emotionally intense.

The affective intensity stereotype is continuing to motivate theoretical inferences today; utilizing speculation, Salby (1992) concludes, not only do artists experience sadness and depression more frequently than the general population, artists seem to have a broader range of emotional experience that often manifests into its clinical form, manic-depression.

As a caveat, it is important to note Salby's use of the words "seem" and "often." It is the present researcher's contention that Salby is speculating due to traditional stereotypes. In fact, in his theoretical article, Salby (1992) bases his entire speculation on the fact that one previous study reports a 20% incidence of

hospitalization for bipolar illness among poets compared to a 2% incidence, of the same type, among the general population.

Additionally, contemporary researchers and theorists, exploring affective intensity and creativity, conclude that creativity acts as a medium for emotional management. A 25-year follow-up study completed by Cangelosi and Schaefer (1992) concludes that ten highly artistic women create primarily to fulfill inner psychological needs for understanding subjective reality, maintaining order and control, and emotional mastery. If affective intensity is actually positively associated with creativity, as suggested by the stereotype, it seems unusual that creativity would act as a medium to quell emotions. Cangelosi and Schaefer's study (1992) indicates that the creative process leads to affective homeostasis rather than affective intensity.

Early psychodynamic theorists do not only stress the psychologically defective aspects of the artistic personality. Intelligence is also inferred as a trait strongly associated with creativity. Many theorists (Nisbet, 1900; Hyslop, 1925; Ellis, 1926) use the words genius and artist synonomously in their writings. Hyslop (1925) implies that it is impossible for prominent artists to lack intelligence. Likewise, in contemporary psychodynamic literature, famous artists and composers who define new styles and trends in art are commonly described as geniuses (Meissner, 1994; Whybrow, 1994; Zerbe, 1995).

While the stereotype linking intelligence and creativity seems to be continuing to motivate contemporary theory, it is rare to find studies linking full scale intelligence to a general measure of creativity. Most studies reveal

associations only among sub-scales of intelligence and creativity. In Martin, Blair, Stokes and Armstrong's study (1977), it was suggested that the Object Assembly and Block Design Tests of the WAIS (Wechler, 1981) "may" reflect some type of creative ability since significant correlations were reported between the Object Assembly and Block Design Tests of the WAIS and the Torrance Tests of Creative Thinking (Torrance, 1966).

For the intelligence stereotype to be supported, it follows that full scale intelligence measures would have to relate with general scores of creativity and be replicated among many studies. Sub-scale measures of intelligence can not represent the stereotype of intelligence since intelligence is informally assessed as a global trait.

As presented, while creativity stereotypes continue to motivate theory and inquiry, the present researcher has not found studies specifically designed to evaluate the validity of the creativity stereotypes themselves. If the results of creativity research were to clearly support the creativity stereotypes, it would follow that there would be no need to "go back" and specifically examine the original biases, but this is not the case.

In addition to producing seemingly discordant results, the related depression research tends to investigate the incidence of clinical depression among artists rather than measuring degrees of association between depression and creativity (Slaby, 1992); therefore, the stereotype begins with an assumption of mental illness rather than studying "normal" functioning among highly creative individuals. Related affective intensity theorizing often views creativity as a

medium for managing emotions rather than espousing the polarization of emotions (Cangelosi & Schaefer, 1992). Related intelligence research tends to exhibit only sub-scale associations with creativity (Martin, Blair, Stokes, & Armstrong, 1977). It seems reasonable to assume that if creativity stereotypes are playing a part in motivating contemporary research that they should first be specifically investigated for validity.

Purpose

Motivated by the traditional stereotypes appearing in the literature, which view artists as depressed, emotional, and intelligent, the present study aims to discern whether or not there are significant correlations between creativity and depression, emotional intensity, and intelligence; therefore, it is the primary concern of the researcher to explore whether creativity stereotypes are based on significant associations or whether they are myth-driven. In preparing proposals for research and constructing creativity theory, is it reasonable to begin with the assumption that highly creative people are likely to be more depressed, more emotionally intense, and more intelligent than less creative people?

In being the primary variable of study, creativity must be assessed carefully. Some traditional theorists within the art community believe that general creativity can not be captured as a measure of degree. Abra (1988) and Gnezda-Smith (1994) suggest that creativity is a highly subjective construct, encompassing several discrete qualities, which can best be studied through qualitative methods. The skepticism for quantitative inquire, utilizing general measures, motivates the experimenter to consider how well a commonly

employed, general creativity measure actually represents creativity; therefore, the present study will attempt to evaluate the construct validity of a popular general creativity measure. If the creativity stereotypes are to be validated or dismissed, it follows that an accurate measure of general creativity must be employed in the process.

Definitions

The study's measures are defined in the glossary which follows. The list begins with three different definitions of creativity. Following the creativity measures, the stereotype variables are defined.

Creative Personality Scale. A general creativity measure. A gauge of creative personality type or trait. A global measure of associating ideas in unusual ways, unconventional thoughts, wide interests, enjoying sensuous experiences, genuinely valuing cognitive matters, aesthetic reactivity, high aspirations for self, and willingness to take risk (Gough & Heilbrun, 1983).

Origence. A discrete creativity measure. A scale of the preference to structure elements in novel ways. A tendency for open-endedness. Favoring asymmetry over symmetry, complexity over simplicity, and metaphorical over literal representations of concepts and ideas (Welsh, 1975); like the Creative Personality Scale, Origence is designed to test personality.

Intellectence. A discrete creativity measure. A cognitive measure intended to evaluate the ability to think abstractly, to form concepts, and to evoke relationships (Gough & Heilbrun, 1983).

Depression. A measure of low affect as represented by specific attitudes or symptoms defining the psychiatric diagnosis of clinically depressed patients. For example, sadness, social withdrawal, and suicidal ideation are three of the 21 attitudes or symptoms that are evaluated (Beck, Steer, & Garbin, 1988). Depression is defined independent of any particular theoretical perspective or bias.

Affective Intensity. A measure of the typical strength of an individual's emotional responsiveness. The relative magnitude of experienced emotion in individuals given the same level of emotional stimulus.

Intelligence. A measure of mental or cognitive abilities characterized by verbal and performance skills. Considered the global capacity of an individual to act with intent, to think rationally, and to deal effectively with his or her environment (Jackson, 1984).

Questions

Research question one. Is the general creativity measure satisfactory in its representation of the actual general creativity of a group of individuals deemed to be of higher than average creativity?

Research question two. To what degree is the general creativity measure an accurate measure of general creativity?

Research question three. Which, if any, of the creativity stereotypes (depression, affective intensity, and intelligence) are supported by statistical significance? In other words, when researchers explore the relationships between creativity and depression, affective intensity, and intelligence, are they

being motivated by traditional assumptions regarding the creativity stereotypes or are the creativity stereotypes valid and the researchers being motivated by stereotypes based in truth?

Chapter Two

Literature Review

Introduction

As previously stated, Abra (1988) and Gnezda-Smith (1994) doubt the ability for standardized general creativity measures to accurately represent the subjective experiences of creativity. Since there is some skepticism regarding the validity of general measures of creativity, it is first imperative that the present study determines whether or not the construct validity of the general creativity measure is of a satisfactory strength.

It is expected that students in advanced fine art, drama, and dance courses will at least exhibit an above average mean score on the general creativity measure. If this is not the case, the general measure of creativity can not be employed in discerning the validity of creativity stereotypes since it will be considered to be producing dubious results.

Since the construct validity of the general creativity measure must first be assessed before employing the measure to test the creativity stereotypes, the literature review will begin by presenting information regarding the concept of construct validity and regarding construct validity in relation to general measures of creativity.

Secondly, in elaborating on the rationale for the study, the literature review will present the creativity stereotypes by noting both historical and contemporary instances where creativity is assumed to be related to depression, affective intensity, and intelligence. The "Creativity Stereotypes" section will

exclusively address instances when creativity is assumed to be related to depression, affective intensity, and intelligence without having been directly substantiated by formal research or any form of systemic inquiry.

Finally, in establishing the need for the present study, theories and research results will be presented that explore the relationships between creativity and affective intensity, intelligence, and depression. The justification of the present study follows from the fact that the theory and research relating creativity to affective intensity, intelligence, and depression do not result in any consensus regarding the nature of relationships between creativity and the stereotyped variables. A strong consensus would be required to justify an application of a stereotype. In fact, the theory and research that is presented often exhibit paradoxes.

Construct Validity

According to Stevens (1992), construct validity represents how well an assessment device actually measures the construct it is intended to measure. Utilizing a common sample, construct validity is usually assessed by correlating the scores on two scales intended to measure the same construct. The scale to be assessed is related to a scale that has established its credibility through extensive research and application (Stevens, 1992).

Since the credibility of all general measures of creativity are called into question by Gnezda-Smith (1994) and Abra (1988), attempting to establish the construct validity of the general creativity measure by merely comparing it with another general creativity measure contradicts the purpose of the assessment;

therefore, the present study will employ an unconventional method, expecting an above average performance by "artists" on the general creativity measure -- as detailed in Chapter Three.

As previously noted, some traditionalists within the art community believe that general creativity can not be captured as a measure of degree. Abra (1988) and Gnezda-Smith (1994) suggest that creativity is a highly subjective construct, encompassing several discrete qualities, which can best be studied independently through qualitative methods. Gnezda-Smith (1994) opts to study general creativity exclusively through qualitative means; she stresses the importance for artists to define creativity on their own terms. Unlike Abra, she does not distinguish between general creativity and the discrete traits of creativity. Abra (1988) criticizes attempts to represent general scores of creativity; he suggests that creativity can best be understood through the independent study of underlying creativity traits or of discrete qualities of creativity. Unlike Gnezda-Smith, Abra does not suggest that quantitative methods are necessarily inferior to qualitative methods of research.

While some theorists are skeptical regarding the efficacy of using a standardized general measure of creativity, others clearly espouse the practice. The fact that creativity measures are regularly evaluated for construct validity, through the process of cross-validation with other measures, establishes an acceptance of general creativity measures.

When the Torrance Tests of Creative Thinking (TTCT) (Torrance, 1966), is used to isolate high and low creative adults, High Creatives obtain significantly

($p<0.01$) higher mean scores on the What Kind of Person Are You (WKOPAY) test of the Khatena-Torrence Creative Perception Inventory (KTCPI) (Khatena & Torrance, 1976). Additionally, when WKOPAY is correlated with the Imaginative Story (Torrance, 1962), a correlation coefficient of 0.73 is exhibited.

On the other hand, a correlation coefficient of 0.73 does not convincingly establish construct validity; for example, cross-validation of intelligence tests commonly exhibit more substantial correlation coefficients of greater than 0.90 (Jackson, 1984).

Furthermore, in espousing Abra's (1988) skepticism, the KTCPI contains more than one measure of general creativity. If each measure actually represents general creativity then it seems redundant to employ more than one such measure per test. Is it possible that the test is actually attempting to represent discrete traits of creativity rather than general measures?

In fact, through the process of an extensive literature review, the present researcher could only identify one group-administered test that employs a single general measure of creativity, the Creative Personality Scale, CPS, of the Adjective Checklist (Gough & Heibrun, 1983); therefore, the present researcher has decided to use the CPS as the general creativity measure in the present study. If the construct validity of the CPS is deemed satisfactory through testing, Abra's skepticism will be disregarded, and the CPS will be used to assess the creativity stereotypes.

To be cautious, in consideration of Abra's skepticism and as a preventative measure, the present study will also need to employ measures of

the discrete qualities or traits of creativity. If the CPS is not deemed satisfactory, only measures of the discrete qualities of creativity can be used, with confidence, to assess the creativity stereotypes. If the CPS is deemed satisfactory, all creativity scales will be used to discern the nature of the relationships between creativity and depression, affective intensity, and intelligence; however, the results utilizing the CPS will take precedence in discerning the creativity stereotypes due to the fact that the CPS is a general measure and stereotypes are general in nature.

Fortunately, the Adjective Checklist (Gough & Heibrun, 1983) also includes measures of discrete qualities of creativity, Origence and Intellectence; therefore, it will not be necessary to make the research participants complete an additional test for creativity.

The CPS is simply described as being a measure of creative type personality. Origence is described as being a measure of a tendency to be original or open-ended. Intellectence is described as being a measure of a preference for abstract thinking, common among creative people (Gough & Heibrun, 1983). (Refer to Chapter Three for a more thorough description.)

Creativity Stereotypes

Historically, world populaces have viewed creative practitioners with fear and skepticism. The fear of being invited to try something new and unusual may underlie such concerns (Schubert & Biondi, 1975). Using similar reasoning, Slaby (1992) is a proponent of the following perspectives. To support the creative, we must reduce the stigma of being different -- of being extremely

creative, bright, or sensitive. Social difference may be the greatest risk factor of all. Individuals with extreme ability often suffer like individuals with extreme disability due to their lack of social acceptance.

On the other hand, maybe the average person intuitively sensed there was something profoundly different about, and therefore "wrong" with, the creatively gifted (Lombroso, 1891); after all, there is a prevalence of mental disease among prominent artists such as Vincent Van Gogh and Emily Dickinson (Schubert & Biondi, 1975).

Early on, during the dawn of contemporary psychological thought, the artist was deemed to be psychologically unstable (Schubert & Biondi, 1975). Early twentieth century psychoanalytic writers, including Lombroso (1891), Nisbet (1900), Hyslop (1925), Ellis (1926), and Lange-Eichbaum (1931), suggested a positive relationship between abnormal personality and genius, intelligent or creative individuals.

Depression. More has been written about the subjective experience of disturbed mood in the artist than probably any other group of sufferers (Whybrow, 1994). One wonders how the artist became so strongly associated with affective disorders.

In 1900, Freud (1959/1900) observed that artists have a tendency to be introverted. Freud also concluded that introversion is a passive trait that frequently leads to depression; therefore, Freud's theory promoted a stereotype, which related artists with depression.

More generally, Freud (1959/1900) described the artist as having an introverted disposition, which did not have far to go before coming neurotic. Freud (1949/1908) believed that artistic productivity resulted from a defense mechanism called sublimination. He purposed that while sublimination was one of the healthier defense mechanisms, a completely happy person would not employ any defense mechanisms at all.

It is of interest to note that while the depression stereotype may motivate research and remains evident in literature today, contemporary psychodynamic theorists have since altered their conception of the creative process. Psychodynamic theorists are now viewing creativity as a beneficial process rather than merely a product of disturbed psyche. Philosophical publications tend to view psychotherapy and creativity as fulfilling the same basic function. Evidence suggests that a good balance between reality and internal desires is the goal of creativity training and psychotherapy (Schubert & Biondi, 1975). Creativity, like neurosis, are both methods used by the ego to solve conflicting, opposite emotions, but creativity works like psychoanalysis as a step towards, rather than away from, good mental health (Noy, 1979).

The stereotype of the emotionally defective artist may have also been reinforced by the Protestant Ethic (Schubert & Biondi, 1975). Mirels and Garrett (1971) found that individuals with creative interests tend to reject the norm of Puritan Ethics. Schubert & Biondi (1975) believe that this rebellion aggravates the majority, who accept Puritan Ethics, and leads them to consider the artist emotionally inferior.

As previously stated, the depression stereotype seems to be a popular one. More has been written about the subjective experience of disturbed mood in the artist than probably any other group of sufferers (Whybrow, 1994).

Affective intensity. Historically, emotion has been presented as the heart of the creative process (Collingwood, 1938). As with depression, the psychological stereotype of artists as sensitive and emotional individuals stems from Freud's (1949/1908) suggestion that artists were emotionally or mentally disadvantaged.

As published in 1949 (1908), Freud's analyses of artists resulted in his belief that creativity is a form of cathartic sublimination utilized to manage intense emotions, which artists have no other way of expressing; therefore, Freud's view-point developed a stereotype, which suggests that artists are emotionally intense.

The affective intensity stereotype is continuing to motivate theoretical inferences today; utilizing speculation, Salby (1992) concludes, not only do artists experience sadness and depression more frequently than the general population, artists seem to have a broader range of emotional experience that often manifests into its clinical form, manic-depression. As a caveat, it is important to note Salby's use of the words "seem" and "often." It is the present researcher's contention that Salby is speculating due to traditional stereotypes. In fact, in his theoretical article (1992), Salby bases his entire speculation on the fact that one previous study reports a 20% incidence of hospitalization for bipolar

illness among poets compared to a 2% incidence, of the same type, among the general population (Goodwin & Jamison, 1990).

Intelligence. Creative individuals have always been considered to be of high intelligence. Many theorists (Nisbet, 1900; Hyslop, 1925; Ellis, 1926) use the words "genius" and "artist" synonomously in their writings. Hyslop (1925) implies it is impossible for prominent artists to lack intelligence. Likewise, in contemporary psychodynamic literature, famous artists and composers who define new styles and trends in art are commonly described as geniuses and brilliant (Meissner, 1994; Whybrow, 1994; Zerbe, 1995).

Sternberg & Lubart (1993) explain this stereotype by proposing a theory whereby creative individuals "buy low and sell high"; Sternberg and Lubart suggest that creative individuals introduce ideas or concepts that initially seem odd, out of sync with the ideas or concepts of others. Over time, these gifted individuals bring their ideas to fruition by convincing others of their worth. At this point, the creative individual metaphorically sells ideas when they are at a "high price" and moves on to the next novel idea.

The conventional masses recognize the creative individual for their perceived ability to discern the presumed intrinsic value of ideas at a time when others are unable (Sternberg & Lubart, 1993). The conventional masses consider this ability to be a product of the creative person's heightened intelligence. Such illustrations seem evident in psychodynamic literature, which dogmatically describes famous artists and composers, who defined new styles and trends in art, as geniuses (Meissner, 1994; Whybrow, 1994; Zerbe, 1995).

Creativity and Depression

While research indicates that there is a relationship between the constructs of affect and creativity (Larson, 1990), there is a controversy regarding the nature of the relationship between depression and creativity (Whybrow, 1994; Gnezda-Smith, 1994). Among the popular research questions, used to define the nature of the relationship, are the following. Does depression increase creativity (Whybrow, 1994; Maschio, 1992)? If so, do therapeutic interventions for affective disorders threaten the essential creativity of the artist (Whybrow, 1994)? And in contrast, does depression act as a constraint to creativity (Whybrow, 1994; Higgins, Qualls & Couger, 1992; Hirst, 1992)? At present, while opinions abound, researchers have little more than case history and anecdote as a clinical guide (Whybrow, 1994).

Of the evidence that exists, which discerns the specifics of the relationship that is drawn between depression and creativity, two main themes emerge. A disproportional, larger number of highly creative individuals are diagnosed with clinical depression (Slaby, 1992; Andreasen, 1987; Andreasen & Canter, 1974; Jamison, 1989). When creative individuals are treated for depression, their creative productivity improves (Whybrow, 1994; Hirst, 1992; Ostwald, 1992; Mellgren, 1976).

During the past three decades, many theorists denounced the general association between creativity and mental disorder (Schubert & Biondi, 1975). While researchers were positing a lack of association between schizophrenia and the creative personality, many were expanding efforts to point out that they

were discovering a higher incidence of depression among creative people and their relatives than among individuals in the general population (Anderson & Canter, 1974; Slaby, 1992).

In studying the incidence of depression among writers, Anderson and Canter (1974) found that 80% of the participants in the Iowa Writer's Workshop suffered a depressive episode that met the criteria for a major affective illness. Merely 30% of controls, matched for age, education, and sex, suffered from similar depressive episodes. As a note of interest, comparison of familial history of writers and controls indicated significantly more creativity and depression in the writers' families.

Jamison (1989) studied a group of "outstanding" British artists and writers chosen for having won at least one prestigious award in their field. Of these, 38% had received treatment for clinical depression, and 50% of the poets sub-group had been treated with drugs or hospitalized for depression. Conversely, the estimated prevalence of clinical depression for the general population is only 4.4%.

One study (Ludwig, 1992) even goes as far as to conclude that lifetime depression is significantly predictive of creative achievement. An unprecedented 1005 subjects were employed in the study. Ludwig used a measure designed for the study, Creative-Achievement-Scale, as a dependent variable and performed a stepwise multiple regression analysis. It was found that Lifetime Depression, as indicated by biographical evidence, is a significant predictor of creative achievement ($r^2 = 0.04$, $p < 0.01$). Ludwig suggests that there might be some

truth to the age-old belief in a relationship between psychopathology and genius; however, he cautions, while the results reveal a statistically significant relationship, the association is extremely weak and not likely to be meaningful.

It is also possible to find literature that does not support the depression stereotype. Sitton and Hughes (1995) conducted two studies. In the first, 132 subjects completed the Beck Depression Inventory and the Remote Association Test. In the second, 100 subjects completed a questionnaire regarding their perceptions of their creative processes. Both studies concluded that there were no significant associations between current depressive state and creativity.

Most of the literature that explores the effects of counselling on the artist analyses the change in creative productivity after an affective symptom or disorder has been treated. Two of such studies follow.

In Mellgren's (1976) study, 17 painters and sketchers were presented as having suffered from depression due to a lack of creative inspiration, activity, and confidence. First, the subjects were asked to sketch a drawing. Secondly, they were hypnotized. Finally, after post-hypnotic suggestions for affective and creative improvements, the subjects were asked to sketch an additional drawing.

Thirteen of the 17 post-hypnotic drawings were considered better than the pre-hypnotic drawings by a panel of three judges who were not informed regarding which drawings were pre- or post-hypnotic. After noting the potential problem of using a small sample size, the study concludes that hypnotherapy stimulates creation in artists whose work is originally hampered by depression.

In a qualitative study by Hirst (1992), six artists describe their creative blocks as being attributed to feelings of fear, self-doubt, frustration, desperation, and depression. More specifically, for all six artists, a lack of confidence or a negative attitude was reported as preventing a free flow of ideas for painting.

Following a structured interview, it was found that all six artists indicated that relaxation training, working on new directions and experimenting with new techniques helped stimulate creativity. All of the artists indicated that a therapist's goal should be to help creative individuals identify negativity and to help create an environment which promotes play, solitude, self-confidence, and the suspension of judgment.

Of the studies that empirically examine the relationship between creativity and depression, the present researcher has identified only one (Sitton and Hughes, 1995) that employs the Beck Depression Inventory (BDI) (Beck, Steer, & Garbin, 1988). It seems unusual that only one study utilizes the BDI; it is the most popular, most validated depression instrument used for psychiatric assessment and research (Beck, Steer, & Garbin, 1988).

If studies are to be replicated, in an effective manner, it is best to use instruments that have been the most thoroughly researched, validated, and applied (Stevens, 1992). The most popular instruments are easy to attain, exhibit larger degrees of reliability and validity, and lead to a direct comparison of results. In acting as a proponent for more standardized inquiry into the relationship between creativity and depression, the present researcher decided

to employ the Beck Depression Inventory (Beck, Steer, & Garbin, 1988) in the present study.

The BDI is a multiple-choice test, which measures the presence and degree of depression in adolescents and adults. Each of its 21 questions is designed to evaluate a specific attitude or symptom which appears to be particular to depressed individuals (Beck, Steer, & Garbin, 1988). (Refer to Chapter Three for a more thorough description.)

Creativity and Affective Intensity

Noy's (1979) philosophical stance suggests that creativity enables the communication of latent emotions; creativity is viewed as a device for emotional management. Noy suggests that both neurosis and creativity attempt to solve the same underlying problems, but creativity is a step in the direction of mental health. When artists create new forms, they strive to find new means to keep them from denying and repressing emotions. Noy considers creativity a medium for emotional expression.

In addressing the way artists cope with the death of loved ones, Maschio (1992) espouses Noy's view of creativity as a device for emotional management. Maschio suggests the artist's challenge is to make something meaningful of loss by moving away from a sense of anger and towards a sense of creative nostalgia and plenitude.

While both Noy and Maschio view creativity as a form of emotional management, the theorists seem to have different views regarding the intensity of emotion subsequent creative intervention. Noy seems to suggest

that undeveloped or repressed emotions become experienced or intensified. Maschio seems to suggest that intense emotions loose their psychic energy or become habituated.

Whybrow's clinical observations (1994) may offer an explanation for the discrepancy between Noy's and Maschio's perspectives. In stating treatment concerns for artists, Whybrow (1994) stresses the complication of treating creative individuals for the clinical analogy of affective intensity, bipolar disorder. In accordance with Noy's inference of a positive association between affective intensity and creativity, Whybrow states that bright, creative individuals rapidly develop opinions about treatment; often, artists who have experienced the energy and euphoria of hypomania do not want to give it up. However, in support of Maschio's inference of a negative relationship between affective intensity and creativity, Whybrow notes that when symptoms are severe, evidence suggests that the creative process is improved with treatment. Following therapy, artists usually admit that being asymtomatic is desirable. In other words, when emotions become managed through therapy, creativity also increases.

One of the more accepted indicators of creativity is the ability to problem solve (Dixon, Hickey, & Dixon, 1992). In Mayer and Salovey's (1993) article, the authors hypothesize that the management of our emotional experience may inadvertently amplify concomitant information necessary for problem solving. It follows that creativity and emotional management may be linked.

In accordance, qualitative research indicates that creativity can be considered an explicit manifestation of emotional management (Gnezda-Smith,

1994). All four artists in Gnezda-Smith's study indicate that emotions are an integral part of completing creative work.

Gnezda-Smith accounted for the influence of age by interviewing an eleven year old, a high school student, a college student, and an adult with a well established career. All participants were asked open-ended questions regarding how their experiences during creative activity relate to the concepts of cognition, emotion, and motivation. While addressing the concept of emotion, all artists indicated that their feelings were the primary purpose for creation. When the eleven year old was asked what emotions had to do with her art, she said, "Everything!" The college student indicated that angst motivated his work and that he believed that the whole basis of his art is emotions.

Furthermore, a 25-year follow-up study completed by Cangelosi and Schaefer (1992) concludes that ten highly artistic women create primarily to fulfill inner psychological needs for understanding subjective reality, maintaining order and control, and emotional mastery. Using an 18-question, essay-type inventory, the Creative Process Inventory (Marsh & Vollmer, 1988), Cangelosi and Schaefer (1992) found that responses to questions were as diverse as the varied backgrounds of the ten subjects. However, one question did produce a remarkable consistency among the responses -- "Does the creative process fulfill any of your psychological needs?" Half of the subjects indicated that creativity manages intense emotions. One artist said her creativity allows her to explore, enhance and then disperse a bad feeling such as fear, sadness, or jealously.

Another participant said that being creative counteracts depression. A third mentioned that creativity works to emotionally balance her mind.

Potentially driven by creativity stereotypes, researchers maintain their efforts to discover what it is that seems so "wrong" with artists. Over time, a pattern began to emerge. While there seems to be no general connection between thought disorders and the creative personality, there is a strong association between affective disorders and the creative personality (Schubert & Biondi, 1975).

Slaby (1992) points out that both depression and bipolar illness are associated with the creative personality. Not only do artists experience sadness and depression more frequently than the general population, artists seem to have a broader range of emotional experience that often manifests into its clinical form, manic-depression (Salby, 1992). For example, in a study by Jamison (1989), thirty-six American poets were interviewed. Twenty percent documented manic-depressive illness requiring at least one hospitalization. The comparable figure for the general population is 1 or 2 percent. It is important to note that a disproportional incidence of manic-depression among artists is not, by itself, sufficient proof of a significant association between the constructs of affective intensity and creativity.

While most of the research espousing the stereotype of emotional sensitivity or intensity among artists focuses on the disproportional incidence of bipolar illness among artists, a couple actually employ descriptive, correlational, and causal experimental designs. Two of such studies follow.

In addition to concluding that artists diagnosed with bipolar disorder experience the greatest degree of creativity when in a high mood state, Richards and Kinney (1990) isolate intense energy/cognition as a characteristic associated with creativity. In the study, Richards and Kinney use mood and personality questionnaires to test 48 subjects with bipolar and unipolar mood disorders. Fifty-four percent of the bipolar I group (exhibiting mania) and 44% of the bipolar II group (exhibiting hypomania) experienced the greatest creativity when in a high mood states. Interestingly, one of the characteristics that significantly correlated with creativity was intense energy/cognition -- a characteristic that is most evident during high mood states.

Also, an experimental study by Goff (1992) indicates that emotional intensity may actually affect creativity. Overall creativity, fluency, and flexibility scores on the Demonstrator Torrance Tests of Creative Thinking (DTTCT) (Torrance, Wu, & Ando, 1980) increased significantly after a period in which subjects engaged in expressive activities.

In Goff's study, 55 elderly participants in a Quality of Life Program, QLP, were tested along with 53 elderly control subjects using the Demonstrator Torrance Tests of Creative Thinking (Torrance, Wu, & Ando, 1980). By chance, the control group scored higher on all 6 of the pretest creativity scores. However, after the participants of the QLP engaged in four months of expressive activities and the DTTCT was administered on all 108 subjects, it was found that the experimental group scored higher on all 6 scores of creativity.

An analysis of covariance was used to determine if the differences between the group means were significant at the 0.05 level. Controlling statistically for pre-test discrepancies, the post-test data indicated that the total creativity score and fluency and flexibility sub-scores of the experimental group had increased significantly ($p < 0.05$) when compared to the control group mean scores.

Goff's study was the only one found that offered evidence that emotional intensity can cause an increase in creativity. One wonders why the study is the only one of its kind. Upon close examination, a couple of concerns develop. Any physical activity may increase creativity among the sample since elderly people usually become sedentary, in many capacities, without their participation in activity programs. Also, many of the expressive activities involved dancing, drama, and fine art practices. It only makes sense that encouraging self-expression through creative practices will lead to an increase in creativity itself.

The literature associating creativity and affective intensity describes the dynamics of emotional expression (Noy, 1979), notes the disproportional incidence of bi-polar disorder among artists (Jamison, 1989), and focuses specifically on the extreme symptomology related to bipolar disorder (Richards & Kinney, 1990). While the empirical literature obviously explores the relationship between creativity and affective intensity, it does not actually utilize a specific measure of affective intensity.

In support of more direct inquiry, exploring the relation between creativity and affective intensity, the present researcher decided to use the only affective

intensity instrument that was available. Through an extensive review of the pertinent literature, the Affect Intensity Measure (AIM) (Larsen & Diener, 1987) was the only instrument that was identified that was designed to measure emotional intensity.

The AIM contains 40 self-statements that are designed to evaluate the magnitude with which a person experiences his or her emotions. The individual being tested is instructed to rate each self-statement by selecting a value from a six-point scale, which corresponds to the varying degrees that each self-statement can apply. (Refer to Chapter Three for a more thorough description.)

Creativity and Intelligence

Theoretically, the link between creativity and intelligence is proposed to be the ability to recognize problem situations and to problem solve. Sternberg and Lubart (1994) distinguish intellectually and creatively gifted individuals from the general population by suggesting that they are able to see problems in ways that others do not, to think divergently about possible solutions, and to use insight processes to complete projects or solve problems.

An article by Maker (1993) posits that problem solving is a key element in each of the traditional domains of intelligence, and that problem solving is, essentially, a creative act. A study of 410 subjects (Bachelor & Michael, 1991), employing factor analysis, isolates "sensitivity to problems" as a common factor among highly creative individuals. Espousing a similar concept, Dixon, Hickey, and Dixon (1992) found that creative intelligence increases problem sensitivity; two hundred and forty three professionally educated women were employed in

the study, which used pathway analysis to interpret data. Of the six constructs being related through a causal model, creative intelligence was found to significantly increase problem sensitivity ($r^2 = 0.19$, $p < 0.05$).

Both philosophical (Sternberg & Lubart, 1993; Hoffman, 1995) and correlation studies (Maker, 1993) conclude by proposing models that describe individuals who are "gifted" both with creativity and intellect. Sternberg and Lubart (1993) suggest that the creatively gifted "buy low and sell high"; they create ideas that initially seem odd, out of sync with the ideas of others. Over time though, their ideas gain momentum and are capitalized upon. Maker (1993) proposes, regardless of the way problems are defined or tasks are explained, gifted individuals tend to interpret them in their own ways and impose their own structure on the problems. Similarly, Hoffman (1995) suggests that high degrees of curiosity and willingness to encounter complex and difficult problems in novel ways are the marks of gifted thinkers.

The threshold hypothesis of intelligence (Guilford, 1967) suggests that creativity and intelligence are related within low and average ranges of intelligence due to the belief that intelligence is a prerequisite for creativity; however, at the upper range of intelligence, greater than 120, creativity and intelligence are considered independent. While eminent intelligence researchers such as Eysenck (1983) have espoused the threshold hypothesis when justifying research methodologies in the field of intelligence, a more recent review (Rushton, 1990) of the research linking creativity and intelligence reveals that very little evidence has been provided to justify the hypothesis.

Rushton (1990) criticizes the conceptualization of the threshold hypothesis. Rushton suggests that the hypothesis was prematurely adopted in an attempt to thwart the controversy regarding the relation between creativity and intelligence (Rushton, 1990).

While there existed a controversy regarding whether or not creativity and intelligence were significantly related (Canter, 1973), one study (Yamamoto, 1964) seemed to confirm the compromise of the threshold hypothesis. While exploring academic achievement among a sample of highly creative students, Yamamoto found that above an intelligence quotient of about 120, creativity and intelligence are not necessarily associated. A recent study supports Yamamoto's assertion. In a study of 496 preschool children, Fuchs-Beauchamp, Karnes, and Johnson (1993) found that intelligence is significantly related to a fluency scale of creativity ($r^2 = 0.24$, $p < 0.001$) when intelligence quotients are less than 120, but intelligence is not related to fluency when intelligence quotients are 120 or greater; fluency refers to the number of different ideas expressed.

While little research has been conducted and there is a conflict in the sparse literature as to whether or not intelligence is associated with creativity, studies using the most validated standardized tests of intelligence and creativity exhibit significant correlations (Martin, Blair, Stokes and Armstrong, 1977). Such studies follow.

A study by Martin, Blair, Stokes and Armstrong (1977) tested forty undergraduate students using the Wechsler Adult Intelligence Scale (WAIS) (Wechsler, 1981) and the Torrance Tests of Creative Thinking (Torrance, 1966).

Results indicate that there were significant correlations between scores on the Block Design of the WAIS and on Verbal Originality ($r = 0.33$, $p < 0.05$), scores on the Block Design and on Figural Elaboration ($r = 0.38$, $p < 0.05$), scores on the Object Assembly of the WAIS and on Verbal Originality ($r = 0.40$, $p < 0.01$), and scores on the Object Assembly and on Figural Elaboration ($r = 0.60$, $p < 0.01$). In conclusion, it was suggested that the Object Assembly and Block Design Tests of the WAIS may reflect some type of creative ability since significant correlations were reported between the Object Assembly and Block Design Tests of the WAIS and the Torrance Tests of Creative Thinking.

On the contrary, while significant correlations were exhibited between measures of creativity and intelligence, associations were not established between the tests of creativity and the full-scale measure of intelligence. Using the most popular devices for assessing creativity and intelligence, Martin, Blair, Stokes and Armstrong (1977) were unable to support the creativity stereotype, which suggests that highly creative people are highly intelligent; since stereotypes are general by nature, studies would need to significantly associate full-scale or general measures of intelligence with creativity to substantiate the stereotype.

Utilizing a less popular device for assessing creativity, a more recent study (Diessner, 1984) found that the Something About Myself (SAM) test of the Khatena-Torrance Creative Perception Inventory (KTCPI) (Khatena & Torrance, 1976) correlated significantly with the Verbal ($r = 0.70$, $p < 0.05$) and Full Scale ($r = 0.60$, $p < 0.05$) of the Wechsler Adult Intelligence Scale-Revised (WAIS-R)

(Wechsler, 1981). The additional KTCPI test, What Kind of Person Are You?, correlated significantly with the Performance ($r = 0.61$, $p < 0.05$) and Full Scale ($r = 0.61$, $p < 0.05$) intelligence measures of the WAIS-R.

As a caveat, the study employed a sample consisting of only twelve adults that were selected non-randomly. Additionally, the average full scale intelligence score for the sample was unusually large at 125, which Diessner admits could have led to dubiously liberal, significant results. The sample was selected by word-of-mouth. Individuals interested in participating in a study, looking for a link between creativity and intelligence, were invited to participate; therefore, it makes sense that individuals with both higher creativity and intelligence would volunteer. It is the present researcher's contention that demand characteristics seem intrinsically enmeshed with the research design of Diessner's study.

Likewise, the only other article identified, that exhibited significant relationships between creativity and full-scale intelligence, employed a questionable research design. Using three separate studies, Rushton (1990) evaluated the association between creativity and intelligence using various assessment devices including standardized tests, self-ratings, and behavioral measures. While the strength of the correlations varied between the studies, all three found there to be a positive relationship between the measures of creativity and intelligence. Two of the three studies found there to be a positive, significant correlation between the measures of creativity and intelligence.

Of the studies that did exhibit significant correlations, the first haphazardly defined creativity as the number of publications and research citings psychology

faculty members experience over designated time periods. The second employed a creativity measure that was adapted twice and based on dated, non-standardized tests of divergent thinking seldom utilized in research. In fact, rather than employing common creativity measures, in all three studies, the experimenter constructed creativity measures particularly for each study.

While the use of the WAIS has become the standard for intelligence research (Martin, Blair, Stokes, & Armstrong, 1977), both the original measure and its revision, WAIS-R, are very time consuming to administer (Jackson, 1984). Researchers must test each subject individually. The present researcher opted to use an intelligence instrument that was group administered; therefore, all of the instruments that were employed in the present study were applicable to group testing, which promoted more efficient testing conditions.

In the present study, the Multidimensional Aptitude Battery (MAB) (Jackson, 1984) was selected as the intelligence instrument for two important reasons. Firstly, unlike the WAIS-R (Wechsler, 1981), the MAB can be group administered, which allowed the research participants to complete the MAB as part of a battery of group administered tests within the same test period. Secondly, the MAB was designed to be a substitute for the WAIS-R, the most popular of intelligence instruments; therefore, Its sub-scales are identical to the WAIS-R. Additionally, the MAB is the only intelligence instrument that has been normed on a Canadian population (Jackson, 1984).

Like the WAIS-R, the MAB evaluates mental abilities. In accordance, the MAB consists of two sub-scales, Verbal and Performance, each consisting of five

sub-test. The MAB is scored to provide Verbal, Performance, and Full Scale intelligence scores. Unlike the WAIS-R, the MAB is a multiple choice test; therefore, it can be group administered (Jackson, 1984). (Refer to Chapter Three for a more thorough description.)

Summary

A lot of literature clearly advocates the stereotypes linking depression, affective intensity, and intelligence to creativity. On the other hand, as psychoanalytic rationalizations of emotional deficiencies, synonymous utility of stereotypical terminology, and assumption-based proof hunting seem prevalent in the literature, one concept develops. Literature seems to be establishing along quasi-paradoxical lines of reasoning in its attempt to affirm stereotypes.

Literature that specifically explores the relationship between emotion and creativity produces the greatest degree of paradox in the mind of the reader. Creative people are more apt to be depressed (Slaby, 1992), yet people are more creative when therapy relieves symptoms of depression (Ostwald, 1992; Whybrow, 1994).

The literature regarding affective intensity also presents a conundrum. While many articles support the notion that creativity is a form of emotional management, the same literature does not clearly isolate the direction of the association between emotional intensity and creativity. In fact, similar models of emotional management propose polar effects of creative intervention (Noy, 1979; Maschio, 1992).

While research exploring intelligence and creativity does not present the paradoxes exhibited in the literature linking affect and creativity, the evidence relating intelligence with creativity does not seem as strong as the evidence linking creativity with affect. Some creativity sub-scales seem to be related to some intelligence sub-scales (Martin, Stokes, Blair, & Armstrong, 1977), yet when full scales are significantly correlated, there exists a controversy regarding the research design of the study (Diessner, 1984).

When an artist is said to be brilliant or a genius, it can be inferred that one is commenting on the over-all intelligence of the artist. Since one usually generalizes intelligence when informally evaluating an other, the intelligence stereotype can only be validated when a full-scale or general measure of intelligence is significantly associated with creativity. While it is possible to find the odd study linking full-scale intelligence with creativity (Diessner, 1984), if the stereotype is to be validated, it is important that many, well designed, studies exhibit full-scale intelligence associations rather than merely sub-scale associations.

The construct of creativity still remains relatively misunderstood in or out of context with its seemingly stereotypical associations with depression, affective intensity, and intelligence; therefore, the present study will explore the potentially significant and predictive values of depression, affective intensity, and intelligence on various measures of creativity in an attempt to verify or dismiss the traditional stereotypes.

In preparation though, it may be the case that the stereotypes are valid, yet they are not being revealed due to faulty attempts at "capturing" general creativity via psychological testing; therefore, the construct validity of a general creativity measure will be assessed. Perhaps Abra (1988) is correct in his belief that creativity can only be accurately studied within a discrete traits context due to its intrinsically evasive nature. It could be possible that social scientists have yet to be successful at operationally defining the construct and producing valid general measures.

Chapter Three

Methodology

Participants

All participants were sampled from a population of students enrolled in courses offered by the Faculty of Fine Art at the University of Calgary. One art course was based in a lecture format. All other courses either included or were entirely composed of experiential work. It was the present researcher's intent to include as many participants as possible who actually practiced an art; however, during testing, there were three participants, from the lectured course, who indicated that they did not practice an art.

Students enrolled in the Department of Music and introductory courses from the Departments of Drama, Dance, and Art were not asked to participate. Lois Choksy, a professor with the Faculty of Music, indicated that advanced courses in art, drama, and dance require higher degrees of creativity while introductory courses and all music courses, focus on technical, less novel, elements of production; therefore, only students enrolled in third and fourth year fine art, drama, and dance courses were requested to participate.

Sixty participants were employed in the study. Sixteen males and forty-four females (See Figure 1.), ranging from nineteen years-of-age to forty-three years-of-age, participated in the study. The mean age of the participants was 23.75 years.

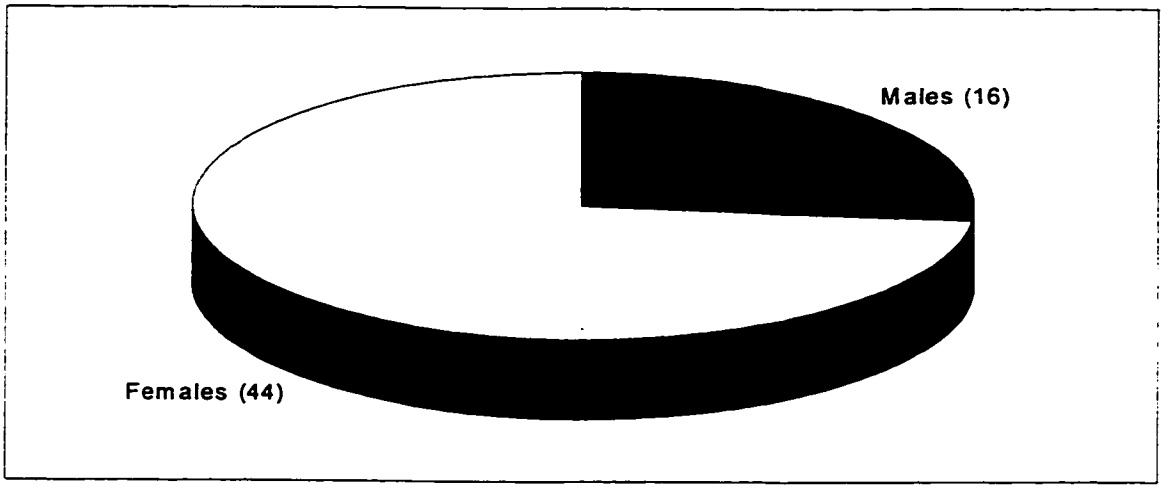

Figure 1. Sex of research participants by number.

The participants were primarily of mixed Anglo-Saxon ethnicity. Fifty-four participants indicated that they were of Caucasian ancestry. The remaining six participants indicated that they were of Asian ancestry.

Most of the participants were enrolled in the Department of Art. See Figure 2. Thirty-six participants were students enrolled in third and four year fine art courses. Twenty-two participants were enrolled in third year drama courses. The remaining two participants were enrolled in a fourth year dance course.

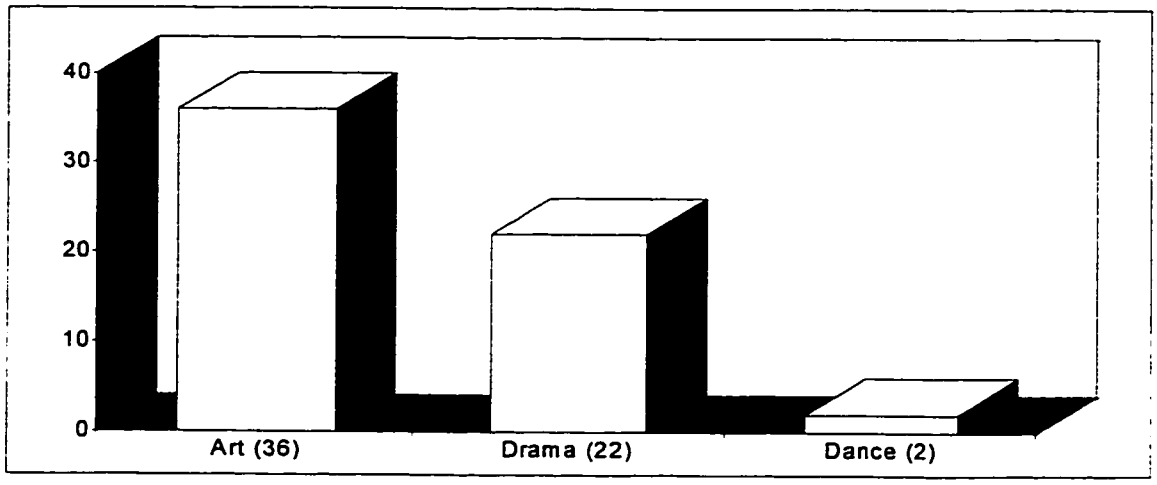

Figure 2. Academic departments of research participants by number.

As illustrated by Figure 3, eight of the twenty-two participants enrolled in drama courses, were completing the requirements for four-year bachelor degrees offered by the Faculty of Education; the majority, fifty-two participants, were completing the requirements for four-year bachelor degrees offered by the Faculty of Fine Art.

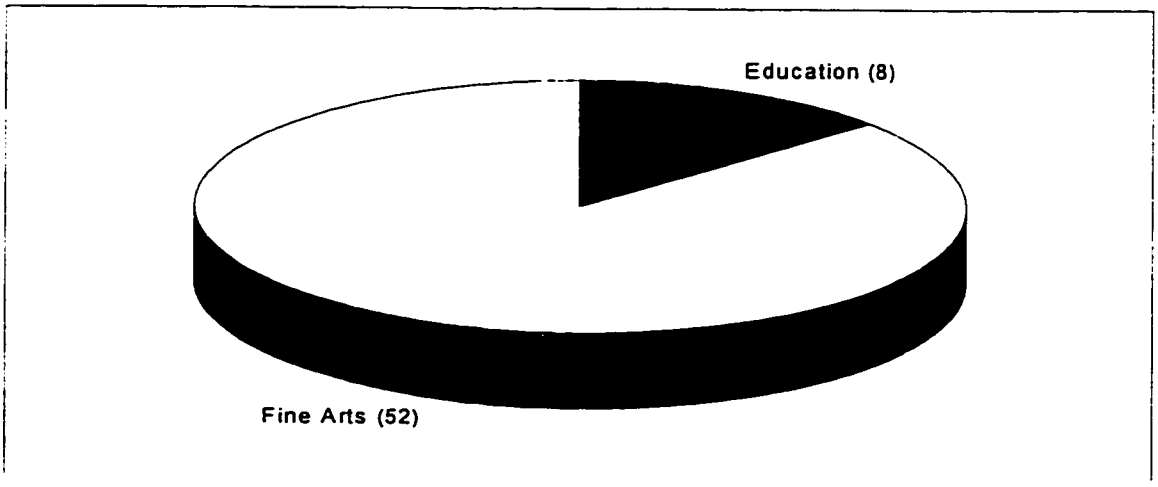

Figure 3. Academic faculty of research participants by number.

As illustrated in Figure 4, the majority of the participants were enrolled in third year courses. While forty-one participants were completing third year courses in either art or drama, only nineteen were completing fourth year courses in either art or dance.

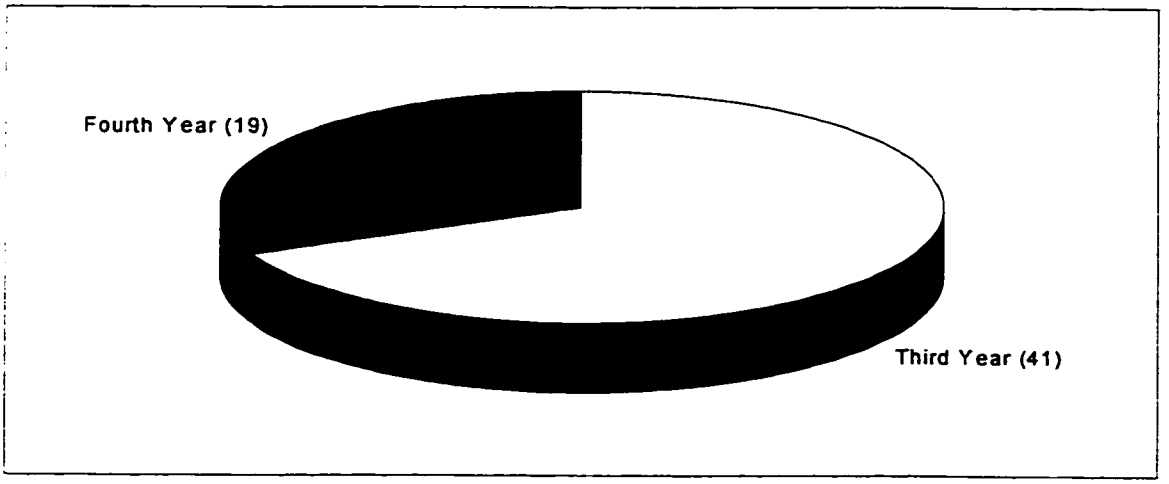

Figure 4. Program year of research participants by number.

Of approximately three hundred students, contacted in nine classes, ninety-two signed consent forms. Of the ninety-two, sixty participants each completed a battery of four test instruments, which provided the data for the study. It follows that approximately 20% of the subjects that were contacted actually participated in the study.

Instruments

The Adjective Check List (Gough & Heilbrun, 1983) was used to measure creativity. The Beck Depression Inventory (Beck, Steer, & Garbin, 1988) was used to measure depression. The Affect Intensity Measure (Larsen & Diener,

1987) was used to measure affective intensity. The Multidimensional Aptitude Battery (Jackson, 1984) was used to measure intelligence.

Adjective Check List (ACL). The Creative Personality Scale and Origence and Intellectence measures of the ACL were selected as creativity measures for three main reasons. The ACL is the only identified, group-administered, instrument that is not constructed with potentially redundant, general creativity scales. In accordance with Abra's skepticism, discrete creativity measures are needed for analysis since the general creativity measure may not be deemed satisfactory following an analysis of its construct validity. The specific creativity measures, Origence and Intellectence, were conveniently located on the ACL in addition to the Creative Personality Scale.

The ACL (Gough & Heilbrun, 1983) is a personality test comprised of adjectives. One is instructed to quickly discern which adjectives are self-descriptive and to place a check next to those that are personally congruent. The scores for thirty-seven scales are determined by adding adjectives deemed concordant and subtracting adjectives deemed discordant to each scale and by consulting standardized tables, which adjust for the total number of adjectives checked, sex, and age.

Of the 37 separate scales, five are related to creativity: Creative Personality; High Origence, Low Intellectence; High Origence, High Intellectence; Low Origence, Low Intellectence; and Low Origence, High Intellectence (Gough & Heilbrun, 1983).

The last four scales can be converted, via manual calculations, into two "pure" or specific measures of creativity, Intellectence and Origence. The two specific measure were used, along with the Creative Personality Scale, in the present study. Origence is calculated by adding the High Origence scales and subtracting the Low Origence scales. Vice versa, Intellectence is calculated by adding the High Intellectence scales and subtracting the Low Intellectence scales.

The Creative Personality Scale is simply a measure of creative personality type or trait (Gough & Heilbrun, 1983). The Scale consists of 30 items, 18 indicative items scored +1 if endorsed and 12 contraindicative items scored -1 if selected. Examples of indicative items are "interests wide" and "original." Examples of contraindicative items are "commonplace" and "conventional."

Origence and Intellectence are creativity measures proposed by Welsh (1975). Welsh believed that attempts to measure creativity had typically focused on cognitive skills such as ingenuity in problem solving and the ability to overcome implicit assumptions. Welsh believed that the dispositional facet of creativity should be given more explicit attention; therefore, he believed two independent measures should be used to investigate creativity: one representing the cognitive aspect of creativity, Intellectence, and one representing the dispositional aspect of creativity, Origence.

According to Welsh (1975), Origence is a measure of the preference to structure elements in novel ways. Orignece measures personality preferences indicative of originality such as favoring complexity over simplicity, asymmetry

over symmetry, and metaphorical over literal representation of concepts and ideas.

Intellectence was initially constructed as a measure of verbal intelligence indicative of a preference for abstract thinking (Welsh, 1975). Intellectence is intended to measure the ability to think abstractly, to form concepts, and to evoke relationships (Gough & Heilbrun, 1983).

Test-retest correlations were calculated for the 37 scales of the ACL (Gough & Heilbrun, 1983). Subjects were tested in two groups consisting of either male or female membership. One-hundred-ninety-nine male subjects and forty-five female subjects were administered the ACL and re-tested following a period of six months and one year, respectively.

The male test-retest correlations for the scales employed in the present study follow: Creative Personality Scale (0.68); High Origence, Low Intellectence (0.34); High Origence, High Intellectence (0.52); Low Origence, Low Intellectence (0.51); and Low Origence, High Intellectence (0.59).

The female test-retest correlations for the scales employed in the present study follow: Creative Personality Scale (0.70); High Origence, Low Intellectence (0.45); High Origence, High Intellectence (0.45); Low Origence, Low Intellectence (0.67); and Low Origence, High Intellectence (0.66).

According to the correlational analyses for both sexes, the CPS proved to be the most reliable creativity scale on the ACL; therefore, if the CPS is deemed satisfactory, subsequent its evaluation for construct validity, the results regarding

the creativity stereotypes will be deemed the most reliable when derived from the CPS.

Concerning validity, an analysis (Welsh, 1975) was performed to correlate subjects' performance on the 37 ACL scales with the clinical judgment of a group of psychologists. Depending on the scale, 12-20 observers rated 106 males and 106 females on a seven, operationally defined, personality traits: Dominance, Independence, Personal Soundness, Modernity, Originality, Masculinity, and Femininity.

Originality was defined as creativity and originality of thinking and in approaches to problems, ability to disregard established procedures and conventions when appropriate, and constructive ingenuity. Originality was the only personality trait that included creativity in its definition.

Among males, Originality correlated the highest with the CPS (0.38). Among females, Originality correlated the highest with the CPS (0.41). With both sexes, of 37 scales, the clinical judgment of Originality correlated the highest with the CPS.

The validity of the Origence and Intellectence measures of the ACL is unknown. As previously detailed, Origence and Intellectence measures are derived from four scales. Since Origence and Intellectence do not have their own scales, direct validation can not take place. Fortunately, the present study is only concerned with assessing the construct validity of a general measure of creativity. The present researcher has not identified literature questioning the efficacy of measuring the discrete qualities or traits of creativity.

Beck Depression Inventory (BDI). The BDI (Beck, Steer, & Garbin, 1988) was selected due to its popularity. While the BDI is the most commonly applied depression instrument in research and psychiatric practice (Beck, Steer, & Garbin, 1988), the present researcher was only able to identify one study that employed the instrument while exploring the association between creativity and depression (Sitton and Hughes, 1995). As a proponent for more standardized inquiry, regarding the depression stereotype, the present researcher decided to utilize the BDI.

The BDI (Beck, Steer, & Garbin, 1988) is a 21-item test utilizing a multiple-choice format, which purports to measure the presence and degree of depression in adolescents (as young as twelve years, ten months) and adults. The depression is determined by asking individuals to select self-statements that best describe the way they have been feeling for the past week, including the day of testing.

Each question attempts to evaluate a specific attitude or symptom, which appears to be specific to depressed patients, based on research literature. For example, Question 12 pertains to the degree to which an individual has lost interest in other people. A four-point scale, ranging from zero to three, is presented along statements that respectively increase in degree of associated depression (Beck, Steer, & Garbin, 1988).

The score is obtained by taking the highest score circled for each question and adding the total number of points for all questions. The higher the total points, the higher the degree of depression.

The test-retest reliability among psychiatric samples ranges from 0.48 to 0.86 and among non-psychiatric samples ranges from 0.60 to 0.90. Internal consistency is high: 0.86 with psychiatric patients (Beck, Steer, & Garbin, 1988), 0.88 with outpatients (Steer, Beck, & Brown, 1989), and 0.81 with non-psychiatric subjects (Beck, Steer, & Garbin, 1988).

With respect to validity, meta-analyses report high mean correlations between the BDI and clinical ratings of depression in psychiatric samples (0.72) and non-psychiatric samples (0.60) (Beck, Steer, & Garbin, 1988). Additionally, studies of discriminant validity differentiate psychiatric patients from non-psychiatric individuals and minor depression and dysthymia from major depressive disorders (Beck, Steer, & Garbin, 1988).

Affect Intensity Measure (AIM). The AIM was selected since it is the only instrument designed specifically to assess affective intensity (Larsen & Diener, 1987). While inferences regarding affect intensity have been made, via indirect methods such as examining the disproportional incidence of bipolar disease among artists (Jamison, 1989), the present researcher has opted to study affective intensity directly by utilizing an instrument particularly designed to assess the construct.

The AIM (Larsen & Diener, 1987) is a 40-item questionnaire that evaluates the characteristic intensity or magnitude with which an individual experiences his or her emotions. For example, Question 39 states, "When I am nervous I get shaky all over."

Subjects respond to each item by selecting a value from a six-point scale. The scale depicts the varying degrees to which the presented affect-statements can apply: (1) Never, (2) Almost never, (3) Occasionally, (4) Usually, (5) Almost always, and (6) Always.

The AIM is scored in two steps. First, the values for eleven reverse scale items are converted. Secondly, all values are totaled. The higher the total score, the higher the degree of affective intensity.

Test-retest reliabilities for the AIM at 1-, 2- and 3-month intervals are high at 0.80, 0.81, and 0.81, respectively (Larsen & Diener, 1987). One study resulted with a correlation of 0.75, which illustrated that test-rest reliability remained high over a period of two years (Larsen & Diener, 1987). In assessing validity, the AIM was found to have correlated with the daily assessment of affective intensity with a coefficient of 0.61 (Larsen & Diener, 1987).

Multidimensional Aptitude Battery (MAB). The MAB was selected for two main reasons. The MAB can be group administered. The MAB is modeled after the most popular intelligence instrument, the WAIS-R (Wechsler, 1981). As a secondary gain, it is encouraging to note that the MAB is the only intelligence instrument entirely normed on a Canadian population.

The MAB (Jackson, 1984) is a multiple-choice test of intelligence or mental abilities, IQ, patterned similar to the Wechsler Adult Intelligence Scale-Revised (WAIS-R) (Wechsler, 1981). Unlike the WAIS-R, the MAB can be administered to a group. Like the WAIS-R, the MAB consists of two sub-scales, Verbal and Performance. Each sub-scale consists of five sub-tests. The Verbal

sub-scale consists of Information, Comprehension, Arithmetic, Similarities, and Vocabulary sub-tests. The Performance sub-scale consists of Digit Symbol, Picture Completion, Spatial, Picture Arrangement, and Object Assembly sub-tests.

While each sub-test of the MAB is individually scored, the MAB is most commonly used to provide Verbal, Performance, and Full Scale intelligence scores for research purposes (Jackson, 1984). In the present study, only the Full Scale intelligence will be utilized due to the general nature of stereotypes.

The MAB is designed to be used with both adolescents and adults. The scores are standardized based on age ranges spanning from 16 to 74 years of age.

A Split-half (odd-even) reliability study resulted in very high correlation coefficients. Verbal, Performance, and Full Scales correlations were 0.92, 0.94, and 0.95, respectively. In accordance, a test-retest reliability study reported Verbal, Performance, and Full Scale stability coefficients of 0.95, 0.96, and 0.97, respectively. In relation to validity, when the MAB is correlated with the WAIS-R, Verbal, Performance, and Full Scales correlate with high coefficients of 0.92, 0.79, and 0.91, respectively (Jackson, 1984).

Questions

Research question one. Is the general creativity measure, CPS, satisfactory in its representation of the actual general creativity of a group of individuals deemed to be of higher than average creativity?

Research question two. To what degree is the CPS an accurate measure of general creativity?

Research question three. Which, if any, of the creativity stereotypes (affective intensity, depression, and intelligence) are supported by statistical significance? In other words, when researchers explore the relationships between creativity and depression, affective intensity, and intelligence, are they being motivated by traditional assumptions regarding the creativity stereotypes or are the creative stereotypes valid and the researchers being motivated by stereotypes based in truth?

Procedure

The present researcher informed course instructors regarding the nature of the study through private meetings and phone conversations. Seven instructors gave the present researcher permission to go to a total of nine classes. Upon being granted the permission to speak with the students, the present researcher entered the class environments, briefly introduced himself, and read both the cover letter and consent form (Appendix A; Appendix B). During this time, students decided whether or not they would like to participate. Within the same period of time, consent forms were then signed by the students who desired to participate. The potential participants each kept a cover letter and signed consent form. The researcher kept a copy of each signed consent form.

All potential participants were contacted by phone so that a testing period could be selected from three that were scheduled. Two sets of three testing periods were scheduled resulting in a total of six testing periods. The testing

periods ranged from one hour and fifty-five minutes to two hours and five minutes in duration. A variation in group size led to the variation in testing times among the six periods; larger groups required more time for asking questions and listening to answers. Throughout the testing periods, group size ranged from four to fifteen participants. With the exception of the ten minute range of testing duration and the group size discrepancy, all participants were assessed in the same classroom under the same conditions.

Having provided a pencil, eraser, and scrap paper to every participant at the beginning of each testing period, the present researcher explained the order and timing of each test to the participants. Four psychological tests were then administered to assess emotional intensity, depression, creativity, and intelligence: the Affect Intensity Measure (Larsen & Diener, 1987), the Beck Depression Inventory (Beck, Steer, & Garbin, 1988), the Adjective Checklist (Gough & Heilbrun, 1983), and the Multidimensional Aptitude Battery (Jackson, 1984), respectively.

The first three tests were administered over approximate time periods allowing every participant an opportunity to complete each measure: approximately eight-and-a-half minutes, seven-and-a-half minutes, and fifteen minutes, respectively. Using a stop-watch, the MAB was then presented, giving exactly seven minutes per sub-test, as instructed by the instrument manual. The present researcher used instrument manuals to instruct the participants throughout the testing process. The total testing period for each group was approximately two hours.

Data Analysis

Given a standard statistical criterion, at least ten participants per variable (Stevens, 1992), sixty participants satisfied the minimum requirement for the study. Exactly sixty participants were employed in the present study.

In evaluating the construct validity of the Creative Personality Scale, the first step consisted of comparing the population mean with the sample mean. The population mean was represented by the average score of the group used to standardize the Creative Personality Scale. The researcher's evaluation was based on two criteria. Primarily, the researcher expected the construct validity of the creativity scale to be high enough to represent artists as having a higher group mean than that of the general population. Therefore, if the population mean was higher than the sample mean, the construct validity of the scale would be deemed unsatisfactory and not be employed for the purpose of discussion in the present study. Secondly and more specifically, the degree of construct validity would be evaluated by relating the sample mean to population percentile ranges, which were arbitrarily constructed by the researcher: 0.00-19.99% (low creative personality score), 20.00-39.99% (below average creative personality score), 40.00-59.99% (average creative personality score), 60.00-79.99% (above average creative personality score), 80.00-99.99% (high creative personality score). If the sample mean fell within the low creative personality score range, the Creative Personality Scale would be deemed to be of low construct validity; if the sample mean fell within the below average creative personality score range,

the Creative Personality Scale would be deemed to be of below average construct validity; and so on.

As the second step, a canonical analysis was performed. Canonical analysis is a form of multiple regression that associates more than one dependent variable with more than one independent variable (Stevens, 1992). As with the standard form of multiple regression, which utilizes only one dependent variable, a predictive model can be constructed with canonical analysis, which exhibits the ability of the independent variables to predict the dependent variables (Stevens, 1992).

In analyzing the creativity stereotypes, a canonical analysis was employed, as the first step, for two reasons. Firstly, canonical analysis accounts for the potential effects of multicollinearity among the dependent variables (Stevens, 1992). The standard form of multiple regression can not account for the actual multicollinearity that may exist among the creativity measures, dependent variables. There is a potential for the repeated assessment of the variances shared by the dependent variables; therefore, using standard multiple regressions may lead to results exhibiting liberal significance. Secondly, canonical analysis is the most general form of multiple regression analysis; therefore, theoretically, it is the most congruent with research that is exploratory (Stevens, 1992). A canonical analysis can identify significant variables while maximizing the predictive value of the independent variables on the dependent variables (Stevens, 1992). Standard multiple regressions can not represent the

maximum or general predictive value of the independent variables on the dependent variables since only one dependent variable is presented at a time.

In the present study, multicollinearilty referred to the potentially confounding effects produced by potentially high correlations among the creativity measures. Multicollinearity can produce misleading and liberal statistical significance when using multiple, standard forms of multiple regression (Stevens, 1992). Every time the independent variables are engaged as predictors for a different creativity measure, the shared association among the creativity measures is being reevaluated as if it were unique to each creativity measure. Canonical analysis compensates for the effects of multicollinearity; therefore, canonical analysis produces more statistically conservative, and therefore, valid results (Stevens, 1992).

Using SPSS software, a canonical analysis was employed to represent the maximum correlation of weighted sets of independent (Depression, Affective Intensity, Intelligence) and dependent (Creative Personality, Intellectence, Origence) variables. Of the significant models that existed, given $p < 0.05$, predictive equations were constructed to describe both the direction and intensity of relation between the sets of independent and dependent variables.

In preparing for stepwise multiple regression, which only exhibits the effects of significant variables, an additional canonical analysis was performed using only the significant variables indicated by the initial canonical analysis. The predictive model constructed from this, more specific, canonical analysis was

more easily compared with the stepwise multiple regression models since only significant variables were represented.

Finally, three multiple regressions were used in an attempt to represent the more specific nature of prediction between the independent variables and each dependent measure of creativity. Since the standard form of multiple regression only relates one dependent variable to multiple independent variables (Stevens, 1992), once statistical significance was identified, the present researcher automatically knew which measure of creativity was significantly predicted by which of the independent variables. With canonical analysis, this may not have been possible since more than one dependent variable, creativity measure, may have been indicated as being significantly predicted by more than one independent variable.

Since the measures of creativity are defined as being orthogonal, independent, or mutually exclusive (Gough & Heilbrun, 1983), there was no theoretical, confounding effect of mulitcollinearity among the dependent variables; therefore, the researcher expected that the same significant variables would be indicated using either the canonical or multiple regression analyses. The actual multicollinearity that exists among the dependent variables was accounted for by the initial canonical analysis. It was the hope of the present researcher that both the canonical and multiple regression analyses would identify the same significant variables.

Only two substantial differences were expected between the canonical and multiple regression analyses. The canonical analysis would illustrate the

maximum predictive value but be the most general, while the multiple regressions would illustrate diminished predictive values and be highly specific (Stevens, 1992).

If different variables were indicated as significant between the canonical and multiple regression analyses, the actual multicollinearity among the dependent variables might have been responsible; therefore, the canonical analysis would have been the focus of discussion. Canonical analysis accounts for the potential multicollinearity among the dependent variables, but the standard form of multiple regression does not. Conversely, if there was a congruence regarding the variables exhibiting significance for the canonical analyses and multiple regressions, the multiple regression analyses would have been the focus of discussion. Multiple regression has the specific ability to discern which significant dependent variable is related with which of the significant independent variables.

Using SPSS software, three stepwise multiple regression analyses were performed. Stepwise refers to the computer's process of entering only statistically significant ($p < 0.05$), independent variables, into each model, in the order of the most predictive to the least predictive (Stevens, 1992).

A stepwise mode of analysis was chosen for two reasons. Theoretically, it is the most congruent with exploratory research since only statistically significant, independent variables are identified. Additionally, in stepwise multiple regression, significance is exhibited in the most efficient possible manner.

Statistically significant ($p < 0.05$), predictive variables are clearly identified and prioritized throughout the process thus leading to a more specific analysis.

Significant models of multiple regression are represented. Both the direction and intensity of the variables are indicated by the sign and weight attributed to each variable, respectively. In analysis, these models have been constructed for each stage of the stepwise process, for each of the three multiple regressions.

Chapter Four

Results

Introduction

In Chapter Four, the results are presented in three sections that exhibit and provide information regarding the three research questions, respectively. The first two sections exhibit results that are used to evaluate the credibility of the general measure of creativity, CPS. The third section exhibits the results that are used to discern the credibility of the creativity stereotypes; therefore, this section is employed to address the main intent of the study.

Results regarding the construct validity of the Creative Personality Scale are presented in the first and second sections. The population and sample means are exhibited for comparison in the first section. So that the sample mean could be assessed for its degree of construct validity, population percentile ranges and corresponding score ranges are illustrated in the second section.

The third section is split into three parts. The first part displays results relating to the initial canonical analysis, which is designed to indicate the significant predictors and creativity measures. A predictive model is illustrated that relates all independent and dependent variables regardless of which have been indicated as significant. The percentage of variance in the creativity measures, as accounted for by the variance in the predictive measures, is noted. The second part displays results regarding the second canonical analysis, which is designed for two purposes: to illustrate the predictive value of only the significant variables and to enable the construction of a predictive model more

easily compared with stepwise, multiple regression models. A predictive model is illustrated that relates all significant independent and dependent variables. The percentage of variance in the significant creativity measures, as accounted for by the variance in the significant predictive measures, is noted. The third part displays results regarding the stepwise multiple regression analyses. Each of the three different creativity measures are used as dependent variables in individual stepwise multiple regression analyses. Each step of a each stepwise analysis is represented. The identified, significant, independent variable and the percentage of variance of the creativity measure explained by the variance of the significant, independent variable or variables is noted for each step of each stepwise analysis. In accordance, a predictive model is illustrated for every step of the stepwise multiple regression analyses.

Research Question One

Is the general creativity measure, CPS, satisfactory in its representation of the actual general creativity of a group of individuals deemed to be of higher than average creativity?

Comparison of means. The sample mean score on the Creative Personality Scale is 53.12. The population mean score on the Creative Personality Scale is 48.49.

Research Question Two

To what degree is the CPS an accurate measure of general creativity?

Sample mean percentile ranking. Having decided to arbitrarily split data into five equal percentile domains, the present researcher calculated the

population standard score ranges. The corresponding population percentile range standard scores for a low creative personality score (0.00-19.99%) is 0.00-39.58, for a below average creative personality score (20.00-39.99%) is 39.59-45.84, for an average creative personality score (40.00-59.99%) is 45.85-51.25, for an above average creative personality score (60.00-79.99%) is 51.26-57.51, and for a high creative personality score (80.00-99.99%) is 57.52-117.00.

The sample mean standardized score on the Creative Personality Scale, 53.12, is equivalent to the 67th population percentile. In other words, if the researcher were to take a multitude of samples (n=60) from the general college population, the sample mean used in the study would be expected to be higher than 67% of all other sample means (Stevens, 1992).

Research Question Three

Which, if any, of the creativity stereotypes (affective intensity, depression, and intelligence) are supported by statistical significance?

Canonical analysis with all variables. The WILKS' Lambda multivariate test of significance exhibits a score less than the preset significance of F value of 0.05; therefore, there is a statistically significant relationship existing between the independent variables and the dependent variables.

The Dimension Reduction Analysis exhibits a significance of F value of less than the preset value of 0.05 on only one of the three possible roots or functions used to independently maximize the correlation of the weighted sets of independent and dependent variables; therefore, only one function will be used as a predictive model.

In considering the significant root or function, a canonical correlation of 0.63 and squared canonical correlation of 0.40 are exhibited; therefore, 40% of the variation in the three creativity measures can be accounted for by the variation in Depression, Affective Intensity, and Intelligence.

In an attempt to identify which variables are responsible for the significant relationship between the dependent and independent variables, the standardized and structure coefficients for both the dependent and independent variables were examined. As a general practice guideline, variables with both standardized and structure coefficient values in excess of I0.30I were indicated as significant (Stevens, 1992); significance is indicated, not guaranteed, by the general practice guideline. Standardized and structure coefficients are presented in Table 1 along with an illustration of the aforementioned process of significant variable indication.

With standardized coefficients of 0.38 and -0.74, respectively, and structure coefficients of 0.56 and -0.86, respectively, Intelligence and Depression were indicated as significant predictors. With standardized coefficients of 0.87 and -0.62, respectively, and structure coefficients of 0.79 and -0.54, respectively, Creative Personality and Origence were indicated as significant dependent variables. Affective Intensity was not found to be a significant predictor nor was Intellectence found to be a significant dependent variable.

Table 1

Coefficients for Canonical Analysis (All Variables)

	Creative Personality	Intellectence	Origence	IQ	Affective Intensity	Depression
Std. Co/e.	0.87*	-0.09	-0.62*	0.38*	-0.29	-0.74*
Str. Co/e.	0.79*	0.14	-0.54*	0.56*	-0.52*	-0.86*
Var. Sig.	Yes	No	Yes	Yes	No	Yes

Note. Std. Co/e = Standardized Coefficient. Str. Co/e = Structure Coefficient. Var. Sig. = Variable Significance? *Coefficients higher than the absolute value of 0.30.

Using the standardized coefficients as weights, the following model has been constructed to represent the maximum correlation of the weighted sets of independent and dependent variables where 40% of the variance of the creativity measures -- Creative Personality (CP), Intellectence (IN), and Origence (OG) -- can be accounted for by the combined variance of Depression (DP), Affective Intensity (AI), and Intelligence (IQ). $0.87z_{CP} - 0.09z_{IN} - 0.62z_{OG} = 0.38z_{IQ} - 0.29z_{AI} - 0.74z_{DP}$ (where "z" is a standardized score).

Canonical analysis with significant variables. In preparing for stepwise multiple regression, which only recognizes the effects of significant variables, an additional canonical analysis is performed employing only significant variables. The predictive model constructed from this, more specific, canonical analysis will be of enhanced value in comparison with the stepwise multiple regression models.

The WILKS' Lambda multivariate test of significance exhibits a score less than the present significance of F value of 0.05; therefore, as expected, there is a statistically significant relationship existing between the independent variables and the dependent variables.

The Dimension Reduction Analysis exhibits a significance of F value of less than the present value of 0.05 on only one of the two possible roots or functions used to independently maximize the correlation of the weighted sets of independent and dependent variables; therefore, as expected, only one function will be used as a predictive model.

In considering the significant root or function, a canonical correlation of 0.61 and squared canonical correlation of 0.37 are exhibited; therefore, it can be said that 37% of the variation in the two creativity measures can be accounted for by the variation in Depression and Intelligence.

In an attempt to verify the significant variables responsible for the significant relationship between the dependent and independent variables, the standardized and structure coefficients for both the dependent and independent variables were examined. As a general practice guideline, variables with both standardized and structure coefficient values in excess of I0.30I were indicated as significant (Stevens, 1992); significance is indicated, not guaranteed, by the general practice guideline. Standardized and structure coefficients are presented in Table 2 along with an illustration of the aforementioned process of significant variable indication.

With standardized coefficients of -0.46 and 0.82, respectively, and structure coefficients of -0.59 and 0.89, respectively, as expected, Intelligence and Depression were indicated as significant predictors. With standardized coefficients of -0.84 and 0.62, respectively, and structure coefficients of -0.78 and 0.55, respectively, as expected, Creative Personality and Origence were indicated as significant dependent variables.

Table 2

Coefficients for Canonical Analysis (Significant Variables)

	Creative Personality	Origence	IQ	Depression
Std. Co/e.	-0.84*	0.62*	-0.46*	0.82*
Str. Co/e.	-0.78*	0.55*	-0.59*	0.89*
Var. Sig.	Yes	Yes	Yes	Yes

Note. Std. Co/e = Standardized Coefficient. Str. Co/e = Structure Coefficient. Var. Sig. = Variable Significance?
*Coefficients higher than the absolute value of 0.30.

Using Depression (DP) and Intelligence (IQ) as predictors and Creative Personality (CP) and Origence (OG) as the dependent variables, the following significant model was constructed. $-0.84z_{CP} + 0.62z_{OG} = -0.46z_{IQ} + 0.82z_{DP}$ (where "z" is a standard score).

Stepwise multiple regression analyses. The results of each step of the three stepwise multiple regressions are presented in Table 3. The table

illustrates the r and r^2 values for each step, the predictors entering for each step, the predictors that entered prior to each step, the dependent and independent variable raw and standard function weights for each step, and the constants of the raw functions for each step.

Table 3

Stepwise Multiple Regression Data

	Dependent Variable	New Significant Predictor (Stand. Wt.) ((Raw Wt.))	Prior Significant Predictor (Stand. Wt.) ((Raw Wt.))	Constant, Raw Score Function	r	r^2
First Regression, Step 1	Creative Personality	Depression (-0.41) ((-0.66))		59.19	0.41	0.17
First Regression, Step 2	Creative Personality	IQ (0.25) ((0.28))	Depression (-0.37) ((-0.60))	27.15	0.48	0.23
Second Regression, Step 1	Intellectence					
Third Regression, Step 1	Origence	Depression (0.31) ((1.05))		60.25	0.31	0.10

Note. (Stand. Wt.) = Standard Score Function Weight. ((Raw Wt.)) = Raw Score Function Weight.

Using Creative Personality as the dependent variable, the computer entered Depression as the independent variable with the highest correlation with Creative Personality. At a significance level of $p < 0.05$ and an observed F-Value of 11.72, the significance of F value is presented as being lower than 0.05;

therefore, the Pearson correlation coefficient of 0.41 and r^2 value of 0.17 are statistically significant; 17% of the variation in Creative Personality is due to the variation in Depression. In accordance, since Depression has a significance of T value of less than the preset p-value of 0.05, it acts as a statistically significant predictor in the regression analysis. Respectively, the standardized and raw score regression equations, for prediction, follow. $z'_{CP} = -0.41z_{DP}$; CP' = -0.66DP + 59.19 (where "z" is a standard score and "'" denotes a predicted score).

Secondly, the computer entered Intelligence as an additional independent variable with the second highest correlation with Creative Personality. At a significance level of $p < 0.05$ and an observed F-Value of 8.40, the significance value of F is presented as being lower than 0.05; therefore, the Pearson correlation coefficient of 0.48 and r^2 value of 0.23 are statistically significant; 23% of the variation in Creative Personality is due to the collective variation of Depression and Intelligence. In accordance, since Depression and Intelligence both have significance of T values of less than the preset p-value of 0.05, they act as statistically significant predictors in the regression analysis. Respectively, the standardized and raw score regression equations, for prediction, follow. $z'_{CP} = -0.37z_{DP} + 0.25z_{IQ}$; CP' = -0.60DP + 0.28IQ + 27.15 (where "z" is a standard score and "'" denotes a predicted score). Since the computer did not find Affective Intensity to be a statistically significant variable, it did not enter it into the stepwise analysis.

When Intellectence was used as the dependent variable, the computer did not isolate any statistically significant predictive variables. Creativity, as

measured by Intellectence, was not significantly correlated to Intelligence, Depression, or Affective Intensity.

When Origence was used as the dependent variable, Depression was the only variable the computer entered as a significant predictor. At a significance level of $p < 0.05$ and an observed F-Value of 6.37, the significance value of F is presented as being lower than 0.05; therefore, the Pearson correlation coefficient of 0.31 and r^2 value of 0.10 are statistically significant; 10% of the variation in Origence is due to the variation in Depression. Likewise, since Depression has a significance of T value of less than the preset p-value of 0.05, it acts as a statistically significant predictor in the regression analysis. Respectively, the standardized and raw score regression equations, for prediction, follow. $z'_{OG} = 0.31z_{DP}$; $OG' = 1.05DP + 60.25$ (where "z" is a standard score and "'" denotes a predicted score). Since the computer did not find Affective Intensity or Intelligence to be statistically significant variables, they were not entered into stepwise analysis.

Summary

The sample mean standardized score on the Creative Personality Scale, 53.12, is equivalent to the 67th population percentile, and it falls within the above average creative personality score range. The population mean standardized score on the Creative Personality Scale is 48.49.

The initial canonical analysis indicated Creative Personality and Origence as statistically significant, dependent variables and Depression and Intelligence as statistically significant, independent variables. Additionally, 40% of the

combined variance of all the creativity measures -- Creative Personality (CP), Intellectence (IN), and Origence (OG) -- can be accounted for by the combined variance of Depression (DP), Affective Intensity (AI), and Intelligence (IQ). $0.87z_{CP} - 0.09z_{IN} - 0.62z_{OG} = 0.38z_{IQ} - 0.29z_{AI} - 0.74z_{DP}$ (where "z" is a standardized score).

Employing only the significant variables, indicated by the initial canonical analysis, the second canonical analysis produces a predictive model in which 37% of the combined variance of Creative Personality (CP) and Origence (OG) is accounted for by the combined variance of Depression (DP) and Intelligence (IQ). $-0.84z_{CP} + 0.62z_{OG} = -0.46z_{IQ} + 0.82z_{DP}$ (where "z" is a standard score).

The first step of the multiple regression analysis, employing Creative Personality as the dependent variable, revealed that 17% of the variance in Creative Personality is due to the variance in Depression. The predictive models follow. $z'_{CP} = -0.41z_{DP}$; CP' = -0.66DP + 59.19 (where "z" is a standard score and "'" denotes a predicted score). The second step identified Intelligence as an additional significant predictor. Twenty-three percent of the variation in Creative Personality was found to be due to the collective variation of Depression and Intelligence. The predictive models follow. $z'_{CP} = -0.37z_{DP} + 0.25z_{IQ}$; CP' = -0.60DP + 0.28IQ + 27.15 (where "z" is a standard score and "'" denotes a predicted score).

The only step of the multiple regression analysis, employing Origence as the dependent variable, revealed that 10% of the variance in Origence is due to the variance in Depression. The predictive models follow. $z'_{OG} = 0.31z_{DP}$; OG' = 1.05DP + 60.25 (where "z" is a standard score and "'" denotes a predicted score).

Chapter Five

Discussion

Introduction

Chapter Five is composed of six sections. The first three sections exhibit and answer the research questions. The first two sections analyze the construct validity of the general creativity measure, CPS. The third section is the most salient since it fulfills the primary purpose of the study, an analysis of the creativity stereotypes. The fourth section notes the limiting factors potentially confounding the efficacy of the study. The fourth section is split into two parts that address issues relating to participant utility and anomalies in research design, respectively. Based on the analyses offered in the first four sections of the chapter, the fifth section purposes directions for future exploration. Two parts offer qualified suggestions for research and implications for professional practice, respectively. The sixth section offers a summary of the research findings within context of the intent of the study.

In the first section, for the construct validity of the Creative Personality Scale to be deemed satisfactory, the sample mean score must exceed the population mean score. The degree of construct validity is assessed in the second section. An analysis is based on which population percentile score range the sample mean score falls within; the degree of construct validity for the CPS is deemed to correspond with the degree of the percentile score range that the sample mean falls within. In assessing the creativity stereotypes, the third section begins with a general discussion employing the canonical analyses data.

The significant creativity and stereotype variables are indicated. The third section then moves into more specific discussions employing the multiple regression data and then the data combined from both types of analysis. The regression analyses isolate which of the stereotypes may be espoused by each particular creativity variable.

Research Question One

Is the general creativity measure, CPS, satisfactory in its representation of the actual general creativity of a group of individuals deemed to be of higher than average creativity?

Comparison of means. As expected, the sample mean score on the Creative Personality Scale, 53.12, is not less than the population mean score on the Creative Personality Scale, 48.49; therefore, the construct validity was not deemed unsatisfactory. In other words, the general creativity measure, CPS, was considered satisfactory in its representation of the actual general creativity of a group of individuals deemed to be of higher than average creativity.

Since the CPS has been deemed to exhibit satisfactory construct validity, all creativity measures will be used in the analysis. At the same time, results particular to the CPS will be the focus of discussion since the measure is general and stereotypes are general in nature. In contrast, if the Creative Personality Scale was deemed unsatisfactory, only the discrete quality or trait measures would have be employed for the purpose of discussion.

Research Question Two

To what degree is the CPS an accurate measure of general creativity?

Sample mean percentile ranking. At 53.12, the sample mean fell into the above average percentile range, 51.26-57.51 (60.00-79.99%); therefore, the Creative Personality scale of the ACL was deemed to have above average construct validity.

It is important to note that the percentile ranges were arbitrarily constructed by the present researcher. The same sample mean could have been related differently depending on how the percentile ranges were defined. The specific percentile equivalent of the sample mean is not arbitrary and may be a more meaningful representation for determining the actual degree of construct validity for the CPS.

The sample mean standardized score on the Creative Personality Scale, 53.12, is equivalent to the 67th population percentile. In other words, if the researcher were to take multiple samples (n=60) from the general college population, the sample mean used in the study would be expected to be higher than 67% of all other sample means.

Since the general creativity measure, CPS, was considered to have a satisfactory, above average degree of construct validity, the present researcher did not heed the skepticism of Abra (1988). Abra criticizes attempts to represent general scores of creativity; he suggests that creativity can best be understood through the independent study of underlying creativity traits or of discrete qualities of creativity such as Intellectence and Origence. However, in this case,

a sample of artists was selected with the expectation that they would score above average on a measure designed to evaluate creativity, and the sample did perform above average on the measure; therefore, the researcher had deemed the construct validity of the Creative Personality Scale to be satisfactory for the present study.

Research Question Three

Which, if any, of the creativity stereotypes (depression, affective intensity, intelligence) are espoused by statistical significance?

Canonical analysis with all variables. Being the most general analysis, it is not unexpected to note that the initial canonical analysis produced a predictive model with the highest degree of explained variance, 40%. The change in the predictive variables accounted for 40% of the change in the measures of creativity.

With standardized coefficients of 0.38 and -0.74, respectively, and structure coefficients of 0.56 and -0.86, respectively, Intelligence and Depression were indicated as significant predictors. Both variables exhibited standardized and structure coefficients in excess of the absolute value of 0.30. With standardized coefficients of 0.87 and -0.62, respectively, and structure coefficients of 0.79 and -0.54, respectively, Creative Personality and Origence were indicated as significant dependent variables. Both variables exhibited standardized and structure coefficients in excess of the absolute value of 0.30.

In examining the initial canonical model, $0.87z_{CP} - 0.09z_{IN} - 0.62z_{OG} = 0.38z_{IQ} - 0.29z_{AI} - 0.74z_{DP}$, paying special attention to significant variables, one

can note the direction of relationships between the significant dependent and independent variables by matching the direction of the canonical coefficient associated with each variable's standard score; positive relationships are denoted by identical directions, and negative relationships are denoted by opposite directions (Stevens, 1992). Creative Personality and Intelligence both had positive coefficients; therefore, they were positively related. Origence and Depression both had negative coefficients; therefore, they were positively related. With similar reasoning, one can conclude that Creative Personality was negatively related with Depression, and Origence was negatively related with Intelligence.

While many of the aforementioned relationships were significant, a canonical analysis is far too general to make such inferences. At the same time, at face value, it is prudent to guess that Depression was a significant inverse predictor of Creative Personality since both variables were significant and both variables had the highest coefficient on each of their sides of the predictive equation (Stevens, 1992). Additionally, it is not surprising to know that Affective Intensity and Intellectence were statistically insignificant since both had the lowest coefficient on each of their sides of the predictive equation.

It was unexpected to observe that the coefficient for the Origence measure was the opposite direction of the coefficient for the Creative Personality measure. While Creative Personality is a general measure and Origence is a discrete quality or trait measure, both are theoretically designed to assess

creative personality. In addition, both measures are derived from the same test, ACL.

Conversely, it was not surprising to note that the Intellectence coefficient had the opposite direction of the Creative Personality coefficient. Unlike the other dependent variables, which measure creative personality, Intellectence proposes to measure the cognitive aspects of creativity. In addition, the Intellectence coefficient was relatively small (-0.09) compared to the Creative Personality (0.87) and Origence (-0.62) coefficients; the smaller the coefficient, the less significant the direction of the coefficient (Stevens, 1992).

If the coefficients of the significant dependent variables had congruent directions, inferences could be formulated regarding which creative stereotypes were supported or rejected (Stevens, 1992). Since inferences could not be attempted at this stage, more specific analyses become crucial.

Canonical analysis with significant variables. In running the canonical analysis with only statistically significant variables, it was not surprising to find that almost the same degree of variance was explained in the resulting model, $-0.84z_{CP} + 0.62z_{OG} = -0.46z_{IQ} + 0.82z_{DP}$. Thirty-seven percent of the change in Creative Personality and Origence was due to the change in Intelligence and Depression, which represents only a three percent predictive decrease due to the omission of the insignificant variables.

As expected, with standardized coefficients of -0.46 and 0.82, respectively, and structure coefficients of -0.59 and 0.89, respectively, Intelligence and Depression were verified as significant predictors. Both variables

exhibited standardized and structure coefficients in excess of the absolute value of 0.30. As expected, with standardized coefficients of -0.84 and 0.62, respectively, and structure coefficients of -0.78 and 0.55, respectively, Creative Personality and Origence were verified as significant dependent variables. Both variables exhibited standardized and structure coefficients in excess of the absolute value of 0.30.

The direction of the relationships between the significant independent and dependent variables were verified by the directions of the exhibited model coefficients. Since the Creative Personality coefficient had the same direction as the Intelligence coefficient and a different direction than the Depression coefficient, Creative Personality was positively related to Intelligence and negatively related to Depression. Since the Origence coefficient had the same direction as the Depression coefficient and a different direction than the Intelligence coefficient, Origence was positively related to Depression and negatively related to Intelligence.

While specific, significant relationships cannot be inferred from a canonical analysis, Creative Personality and Depression were, again, associated with the highest coefficient on each of their sides of the equation; therefore, one could cautiously hypothesize that there was a significant negative relationship between them. Only multiple regression analyses can confirm this hypothesis (Stevens, 1992).

Stepwise multiple regression analyses. The first stepwise multiple regression analysis used Creative Personality as the dependent variable; the

Creative Personality variable simply defines creativity as a general measure of creative personality type or trait (Gough & Heilbrun, 1983). The computer entered Depression as the predictor with the highest significant correlation accounting for 17% of the variation in creativity. The model, $z'_{CP} = -0.41z_{DP}$, clearly illustrates the inverse relationship between Depression and Creative Personality; the coefficient associated with the Depression standard score was negative. Secondly, Intelligence was entered as an additional significant predictor. The complete model, $z'_{CP} = -0.37z_{DP} + 0.25z_{IQ}$, clearly illustrates the positive relationship between Creative Personality and Intelligence; the coefficient associated with the Intelligence standard score was positive. The combined variance of Depression and Intelligence accounted for 23% of the change in Creative Personality. In including intelligence as a predictor, there was only an overall increase in explained variance of six per cent. The vast majority, 77%, of the variance in Creative Personality was not explained by the variance in depression and intelligence.

Since Intelligence was identified as a positive significant predictor, when creativity was defined by the Creative Personality measure, the researcher could not entirely reject the stereotype that suggests that creative people are intelligent. In contrast, since Depression was identified as a negative significant predictor, when creativity was defined by the Creative Personality measure, the researcher could reject the stereotype that suggests that creative people are depressed. In fact, the significant negative relationship actually implied that the more one was depressed, the less one was creative.

When creativity was defined by the CPS, the present research added to the few studies, such as Diessner's (1984) and Rushton's (1990), which establish a significant relationship between full-scale intelligence and creativity. In addition, the present study is unique since it is the only one that has been identified that established a significant relationship between full-scale intelligence and creativity while employing a standardized, general measure of creativity.

When creativity was defined by the CPS, depression was found to be inversely related to creative personality. Far from espousing the creative stereotype, the present study is congruent with Hirst's (1992) and Mellgren's (1976) clinical observations, which suggest that creativity increases when depression decreases. Hirst and Mellgren both documented increases in creativity among artists who experience a decline in depression.

It is important to consider the previous assertions within context. The creative stereotypes were evaluated when creativity was defined by Creative Personality. The creative stereotypes may be evaluated differently when creativity is defined in an alternate manner. Analysis of the additional multiple regression models will illustrate this point.

The multiple regression that used Intellectence as the dependent variable did not identify any significant predictors; therefore, when creativity was defined by the Intellectence measure, none of the creativity stereotypes were supported.

Intellectence was initially constructed as a measure of verbal intelligence indicative of a preference for abstract thinking (Welsh, 1975). Intellectence is

intended to measure the ability to think abstractly, to form concepts, and to evoke relationships (Gough & Heilbrun, 1983).

Using Origence as the dependent variable, the computer entered only one significant predictor, Depression. The model, $z'_{OG} = 0.31z_{DP}$, clearly illustrates a positive relationship between the variables; the coefficient associated with the Depression standard score was positive. Ten percent of the variance of Origence was due to the variance of Depression.

According to Welsh (1975), Origence is a measure of the preference to structure elements in novel ways. Orignece measures personality preferences indicative of originality such as favoring complexity over simplicity, asymmetry over symmetry, and metaphorical over literal representation of concepts and ideas. Unlike the Creative Personality variable, Origence is not a general measure of creative personality. Abra (1988) would characterize Origence as a discrete trait of personality.

When creativity was defined by the Origence measure, the researcher could not reject the creative stereotype that implies that creative people are depressed. In this case, as one became more depressed, one was more creative. Intelligence was not identified as a significant predictor of Origence; therefore, when creativity was defined by the Origence measure, the intelligence stereotype was not supported.

When creativity was defined by Origence, the present research seemed congruent with the results of Anderson & Canter's 1974 survey. Eighty percent of the participants in the Iowa Writer's Workshop suffered a depressive episode

that met the criteria for a major affective illness. Merely 30% of controls, matched for age, education, and sex, suffered from similar depressive episodes. While Anderson & Canter's survey does not establish a predictive relationship between depression and creativity, depressive episodes and advanced creativity occur together with a disproportionate frequency, which may suggest a positive relationship.

When creativity was defined by Intellectence or Origence, the present research may have helped to support the results of a study employing the most popular devices for assessing creativity and intelligence. Martin, Blair, Stokes and Armstrong (1977) were unable to support the stereotype, relating intelligence and creativity, since the full scale intelligence measure did not significantly relate with creativity.

An inconsistency exists between the results of the multiple regression that used Creative Personality as the dependent variable and the results of the multiple regression that used Origence as the dependent variable. The first rejected the depression stereotype and supported the intelligence stereotype. The second supported the depression stereotype and rejected the intelligence stereotype.

An observation of all three stepwise multiple regression analyses leads to a confusing summary. Both the intelligence and depression stereotypes were supported once and rejected twice.

The general creativity measure, CPS, satisfied a test for construct validity and was employed in the present study due to its congruence with the general

nature of stereotyping; therefore, the present researcher was more apt to accept the results of the multiple regression analysis that used the CPS as the dependent variable. The depression stereotype was not supported, and the intelligence stereotype was weakly supported. However, since the results of the analyses were mixed, it was more accurate to conclude that no definitive statement could be made to imply whether or not the depression and intelligence stereotypes were accepted or rejected without first specifying how creativity was being measured.

Combined analysis. Affective Intensity was the only independent variable that was not indicated as a significant predictor within any of the canonical or multiple regression analyses; therefore, the stereotype that views creative people as emotionally intense has not been supported by statistical significance ($p < 0.05$).

The ambiguity in the literature, regarding the association of affect and creativity, may have been supported by the research data. The results have indicated that Affective Intensity is not a significant predictor of creativity. While both Maschio (1992) and Noy (1979) suggest that creativity is a form of emotional management, Maschio suggests that creativity thwarts affect and Noy suggests that creativity amplifies affect. While both theorists recognize a relationship between creativity and emotion, the direction of the relationship is not clearly established. Likewise, Gnezda-Smith's (1994) study documents artists who suggest that emotion is the basis of their creative efforts, yet the direction of the relationship between emotion and creativity is not clearly stated by any

participant; therefore, the present researcher proposes that affect may play a qualitative rather than quantitative role in the creative process.

Intellectence is the only dependent variable that has not been indicated as a significant creativity measure within any of the canonical or multiple regression analyses; therefore, creativity, as measured by Intellectence, was not significantly predicted by any of the variables representing the creative stereotypes.

Intellectence may not have exhibited significance due to the fact that none of the creativity stereotypes were espoused when creativity was defined by the cognitive measure. If this is the case, the creative stereotypes should have been rejected.

On the contrary, maybe a cognitive measure should not have been used to represent creativity. The lack of significance of Intellectence may be explained by Welsh's (1975) contention that a stronger emphasis should be placed on assessing the disposition aspects of creativity rather than merely focusing on conventional, cognitive aspects of creativity. The present researcher proposes that Welsh may not have gone far enough in his attempt to redefine creativity.

It may be the case that cognitive measures such as Intellectence are far less indicative of creativity than personality measures. In accordance, it seems surprising that Intellectence, often considered a measure of verbal intelligence, did not significantly relate with the intelligence measure.

The variables exhibiting significance in the canonical analyses were the same variables exhibiting significance in the multiple regression analyses;

therefore, it was assumed that the potential multicollinearity among the dependent variables did not lead to a confounding of the multiple regression results.

It follows that the multiple regression results could be analyzed, with confidence, due to their assumed validity. The results of the multiple regression analyses became the focus of discussion since a more detailed analysis could take place due to the association of single creativity measures with significant predictors. On the contrary, If each type of analysis did not identify the same significant variables, the canonical analyses would have been the focus of discussion due to the potential confounding effect of multicollinearity (Stevens, 1992).

When researchers explore the relationships between creativity and depression, affective intensity, and intelligence, are they being motivated by traditional assumptions regarding creative stereotypes or are the creative stereotypes valid and the researchers being motivated by stereotypes based in truth? To summarize, regardless of how creativity was defined, the affective intensity stereotype was not supported. The present study suggested that researchers were being motivated by traditional assumptions regarding affective intensity rather than proof of the creative stereotype. According to how creativity was defined, the depression and intelligence stereotypes were supported only once, each, out of a possibility of three times; the present study suggested that the depression and intelligence stereotypes were contingent on the definition of creativity.

Limitations

Participant utilization. While the study sometimes referred to the research participants as artists, not every participant felt comfortable using the label. Three students told the researcher that they were not artists. The label is indicative of the researcher's attempt to present the participants as a group that embodies a degree of creativity greater than that of the general population. Congruent with prior research (Gnezda-Smith, 1994), an attempt was made to assure that the sample embodied a degree of creativity higher than that of the general population; students were enrolled in advanced courses within the departments of art, dance, and drama. The assumption that students of fine art courses are highly creative, and artists, is a theoretical convention employed in qualitative studies (Ginezda-Smith, 1994). Ideally, every member of the "artists" sample would consider the title, "artist," an accurate one.

Along the same lines of reasoning, the researcher considers the possibility that formal education may not be the best place to locate artists for study. Highly creative people may reject formal education due to its utilization of convention in the practice its of pedagogy. Highly creative people, sometimes by definition, prefer open-endedness (Welsh, 1975); therefore, ideally, artists would best be sought through professional organizations such as art organizations and galleries.

The present researcher noticed a strong peer group presence among the students who signed consent forms and actually followed through with testing. While the researcher did not formally document the occurrence, it became

obvious that the students recruited from larger groups and from similar departments were more apt to actually participate in the study after having signed consent forms. The present researcher heard many art students talking before two testing periods. Using humor as a motivation, many participants suggested to their peers that they "go together" for testing to see if they were "more messed up" than other departments. The present researcher believes that larger and more similar groups may be more apt to engage in the type of "group-recruitment" described above; while only further experience and research can appraise the speculation, the present researcher believes that the participation ratio would have been higher if larger numbers of students from each department had been contacted within homogenous groups.

Due to the difficulty of testing a large number of individuals with varying schedules, six separate test periods were utilized. While test conditions were kept as similar as possible, during the six periods, the number of participants varied; therefore, test conditions were not exact.

Not only did larger test groups lead to consistencies in environmental conditions, larger groups also seemed to benefit from there being more questions asked, during the period, prior to the testing. While most participants seemed interested in how creativity was being assessed, members from smaller groups tended to ask questions during and after the testing period. Perhaps a belief that the researcher would not have as much attention to share among individuals in a large group motivated large group participants to ask many questions prior to testing. Regardless of the actual reason, all members of larger

groups benefited from hearing the same answers to the same questions before the testing commenced. Ideally, all of the participants would have been tested, in the same environment, at the same time.

Random sampling could only be approximated. While it was initially the intent of the researcher to draw a random sample from the potential participants, who had signed consent forms, scheduling for test periods became the decisive element, which discerned whether or not a potential participant was evaluated. Many students who had signed consent forms could not participate since their work and university schedules conflicted with all six test periods. Ideally, random sampling would have been employed (Stevens, 1992).

Design anomalies. Many of the articles used in the study were published throughout the history of psychological literature rather than being contemporary in focus. Usually, the majority of articles used in research are published within a few years of the presentation of the research (American Psychological Association, 1994). The current study employed a lot of older resources for two reasons. The researcher had to establish the historical development of the creativity stereotypes. The research relating to the creativity stereotypes seems significantly less abundant than research on most psychological concepts.

Construct validity is an evaluation of whether or not an assessment device is actually testing what it is suppose to test. Usually, construct validity is evaluated by comparing the assessment device in question with similar devices that have been proven their credible through research and application (Stevens, 1992). Since the credibility of all general measures of creativity are called into

question by Abra (1988), it would have been contradictory to attempt to establish the construct validity of the general creativity measure by merely comparing it with another general creativity measure; therefore, it was the researcher's intent to evaluate construct validity in a more creative and practical manner: expecting a group of individuals, deemed to be of high creativity, to score above average on a general measure of creativity. If the study were to be replicated, the researcher would also consider employing the traditional mode of inquiry. The results from both approaches could then be compared.

If the present study had deemed the CPS unsatisfactory, there would have been a theoretic flaw with the research analysis. Based on the present researcher's conception, only general measures can capture the general nature of stereotypes. Analyses based on discrete measures of creativity alone, would have been of questionable value based on the present researcher's conception of stereotypes.

While the CPS was normed on a college population, there is a chance that, on average, the students within many other departments would have scored above the population mean. The norming procedure for the CPS is relatively dated; in general, college students may be more creative in contemporary settings. Rather than comparing the population mean with the results from the Faculty of Fine Arts, one way the researcher could have improved the construct validity assessment would have been to test students from other departments and to compare the art, drama, and dance departments' results to the data of departments outside of the Faculty of Fine Art. To consider the construct validity

of the CPS to be satisfactory, one would expect that the students in the Faculty of Fine Arts should perform better, on average, than the students from departments in other faculties. Taking it one step further, the present researcher could also have opted to use t-tests to discern whether the results of the Faculty of Fine Arts' departments were significantly higher than the results of departments from other faculties.

It is always best to use assessment devices that have been standardized using a population as similar to the research participants as possible (Stevens, 1992). While the MAB and the BDI were at least partially standardized using Canadian populations, the ACL and AIM were standardized using an American population.

Not only may the cultural and geographic differences among countries confound the validity of the results (Stevens, 1992), but populations within Canada may differ significantly as well; for example, one could argue that the BDI, normed in part at the University of New Brunswick, would be normed significantly different with a sample at the University of Calgary. Societal depression may be influenced by factors such as the percentage of sunlight or the employment rate (American Psychiatric Association, 1994), which may differ significantly within regions of a country.

The present study may have benefited from a pilot study. If the construct validity of the Creative Personality Scale was deemed satisfactory in a pilot study, the present researcher would not have had to use Origence and Intellectence as back-up measures. Only one stepwise multiple regression

analysis would have been needed. The analysis would have been much more straightforward.

Since the levels of depression, affective intensity, and creativity may vary significantly depending on environmental conditions such as weather (American Psychiatric Association, 1994), holidays, and examination periods, it is important for the reader to view the present study as a "snap-shot" representing the months of testing, January and February, 1998. To make the results more stable, the study could have employed a longitudinal, repeated measures design; participants could have been assessed several times throughout the year, perhaps quarterly.

Future Directions

Research implications. Fine Art students are not necessarily artists, and creativity stereotypes, such as affective intensity and depression, are probably not stable over time. Future research in the area of the creativity stereotypes may benefit from employing a longitudinal, repeated measures design while employing genuine artists, which can be recruited from professional organizations such as galleries.

To gain access to artists whose schedules enable them to participate in a longitudinal study, a researcher could arrange for permission to speak with those who regularly display their work in a particular gallery. To account for the effect that the time of year may have on depression and affective intensity, a researcher could test the same artists four times -- once every three months.

Rather than just having a "snap-shot" of how creativity relates to the stereotypes, the consistency of the relationships could then be evaluated.

Abra's (1988) skepticism could not be clearly refuted by the present study since the sample and population means were not evaluated for a statistically significant difference. Future researchers should consider two options when planing to evaluate the creativity stereotypes. They could choose a general measure of creativity that has already been evaluated and has exhibited a large degree of construct validity. Researchers could also employ a pilot study, which is specifically designed to evaluate the construct validity of one or more general creativity measures.

If researchers chooses the latter, they should consider using t-tests to discern whether or not there are statistically significant differences between the sample and population means. If more than one general measure is evaluated, the measure with the most significant difference should be chosen for the study. Contrary to the present study design, theoretically, discrete creativity measures should not even be considered in stereotype research.

Since only a few empirical studies have tested the threshold hypothesis, future researchers should finally assess whether or not the intelligence stereotype is a matter of degree. Like with other studies, when significance was established in the present research, the change in intelligence only accounted for a very small degree of the variation in creativity. There may be a chance that the threshold hypothesis is accurate (Guilford, 1967).

Researchers should consider testing a large adult sample using both the MAB and the CPS (or other popular general measures of intelligence and creativity). Researchers could then split the sample into two groups: those with an IQ over 120 and those with an IQ of 120 or less. Two bi-variate analyses could be performed to determine whether there is a significant correlation between intelligence and creativity below an IQ of 121 but not a significant correlation between the variables above an IQ of 120. For the theory to become well established, many studies will have to replicate consistent results.

Since affective intensity is the creativity stereotype with a history of the least amount of empirical research and the present study is only exploratory, a great deal of research is needed with the stereotype before strong inferences can be made with confidence. In the present study, affective intensity was the only stereotypes that was not supported by any definition of creativity within any analysis. This finding is not consisent with the only experimental study (Goff, 1992), which concludes that affective intensity increases creativity.

Researchers could either choose an exploratory or experimental design to study the affective intensity stereotype. To further explore the stereotype, researchers could opt for a design similar to that of the present study. A stepwise, multiple regression analysis, within a longitudinal design, would result with predictive models -- as in the case of the present study; however, since it is longitudinal, the design would have an added benefit of exhibiting stable results. If the CPS is used as the creativity measure, researchers may compare their results with the present study results. Researchers could also opt for an

experimental design. If researchers decide to use an analysis of covariance (Goff, 1992), a homogenous sample of individuals could be split randomly into an experimental group and a control group. After assessing both groups for creativity, researchers could engage the experimental group in expressive activities. Finally, both groups would be re-assessed for creativity. There would be a post-treatment comparison of the experimental and control groups; pre-treatment differences would have to be accounted for statistically. The experimental design is the most powerful choice since a causal relationship can be inferred.

Social scientists should consider assessing the potential for a decrease in depression to lead to an increase in creativity. Whybrow's (1994) assertion that creativity improves after depression diminishes may have been supported by the present study. Using the general CPS measure, not only was the depression stereotype not supported, a significant, though weak, inverse relationship was exhibited.

When the present study explored the depression stereotype, the results contributed to inconsistencies regarding the nature of the relationship between creativity and depression. While the present study did exhibit a significant negative relationship, it also exhibited a significant positive relationship. Previous studies also indicate similar discrepancies. Further correlational or exploratory research will probably not clarify the nature of the relationship.

When the present researcher reviewed the psychological literature, he did not identify a study utilizing a control group or experimental design to assess the

effects of counselling for depression on creativity. To help confirm the significant inverse relationship between creativity and depression, researchers could use an experimental design to test the ability of a decrease in depression to cause an increase in creativity. A homogenous group of individuals, suffering from depression, could be split randomly into experimental and control groups. Both groups would be evaluated for creativity. The experimental group would be counselled for depression, and both groups would then receive post-treatment evaluations for creativity. A comparison could then be made to discern whether or not the counselling for depression lead to a significant increase in creativity.

Counselling and education implications. While the study was only exploratory and the results should only be considered a tentative first step, the findings may help to indicate what the present researcher suspected before initiating the study. Traditional assumptions regarding creativity may be responsible for how social scientists perceive artists. Since our beliefs about people can influence how we behave with people, it may be the case that the traditional assumptions of social scientists are influencing how educators and counsellors work with artists.

While only further research can verify the speculation, the present study indicates that there is little evidence to suggest that the intelligence and affective intensity stereotypes are valid. Affective intensity was not significantly related to any of the creativity measures. Intelligence was only significantly related to one of the three creativity measures. When significance was identified, merely 6% of the variance in creativity was explained by the change in intelligence. Because of

these results, the present study may help to increase awareness regarding assumptions that may enter into how educators and counsellors perceive and treat artists.

A couple of examples of how increasing awareness of potential assumptions may benefit artists follow. If an educator assumes that an artist has high intelligence, she may become impatient when an artist struggles to learn new concepts. The educator may view an artist's learning challenge as a battle of wits rather than a genuine attempt, by the artist, to reveal a failure in the process of education. If an educator is aware that her perception of and interaction with an artist may be influenced by potentially false assumptions, the more apt she is to provide her service free of bias. If a counsellor assumes that artists are very emotional, he may rationalize the significance of an artist's emotional distress during counselling. A counsellor may underestimate the suffering of a client by thinking, "artist are just like that [emotional]; it makes them who they are." When a counsellor becomes more cognizant of his potentially confounding assumptions, his ability to provide ethical and effective counselling will probably improve.

Unlike affective intensity and intelligence, the depression stereotype did not only receive very little support, there was an unanticipated inverse relationship between the general creativity measure and depression. While the study was merely exploratory and the association was weak (17%), it was the strongest significant correlation in the study; therefore, it may be appropriate for educators and counsellors to at least raise the awareness of the potential for an

indirect relationship between creativity and depression. Artists may also benefit from becoming more aware of the potential creative implications of the inverse relationship.

The negative association is well documented in psychological literature. When moderate to high levels of depression are treated, creativity increases (Hirst, 1992; Mellgren, 1976). While the present research does not directly study the effect of counselling artists who are depressed, the significant inverse relationship may help to support prior research that suggests creativity is thwarted by large degrees of depression and that counselling for depression improves creativity.

Artists should be made aware of the potential for large degrees of depression to lessen creativity. Educators of artists should impart the evidence that exists, which exhibits the negative relation between creativity and depression. Furthermore, educators could make artists aware of the potential for counselling to diminish the detrimental creativity effects of depression.

Organizations such as art galleries and fine art departments of universities should provide the knowledge that depression may have the ability to restrict creative development. Additionally, these organizations should provide counselling to artists desiring intervention.

The definition of creativity proved to be a challenge not only when the researcher reviewed the psychological literature but also when the study's research design was being planned, when three participants indicated that they may not be creative enough to be considered artists, and when the research

results exhibited discrepancies depending on how creativity was defined. How does the apparent controversy regarding the definition of creativity impact on educators and counsellors?

If a counsellor is working with an artist who is suffering from a "creative block," it may be important that a considerable amount of time be invested in exploring how creativity is conceptualized. While developing an operational definition of the presenting problem is usually considered an important first step in all counselling, collaborating on a concrete operational definition of creativity may be considered especially important when counselling artists due to the vast variety of opinions regarding the construct of creativity.

An educator may approach creativity from many different perspectives when teaching, but without being clear about how creativity is being conceptualized, at any one time, an educator may confuse her students. If students are to be assessed regarding their creative abilities, it seems only ethical that creativity be clearly defined by the educators who will be engaged in the assessment of students. If educators are not clear about what is being taught and assessed, then the process of education risks loosing relevancy and purpose.

Summary

The present research was based on the observation that traditional creativity stereotypes seemed to be motivating the theory and inquiry of contemporary social scientists. At the same time, the present researcher had not encountered studies designed specifically to evaluate the validity of the creativity

stereotypes themselves. The results of creativity research did not clearly substantiate the traditional stereotypes; therefore, it seemed reasonable that there was a need to directly examine the credibility of the creativity stereotypes.

In preparing proposals for research and constructing creativity theory, was it reasonable for social scientists to begin with the assumption that highly creative people are likely to be more depressed, more emotionally intense, and more intelligent than less creative people? Probably not.

The Creative Personality Scale of the Adjective Check list was deemed to be a general creativity measure with a satisfactory, above average degree of construct validity. Abra's (1988) skepticism, regarding the efficacy of general creativity measures, was not endorsed by the research data given the present researcher's arbitrary definition of significance.

Affective intensity was the only stereotype clearly not substantiated by statistical significance. With the exception of affective intensity, whether or not a stereotype was supported was dependent on the definition of creativity. When researchers work with the assumption that artists are more emotional than the general population, they may be being motivated by myth rather than truth.

Using the most reliable, general measure of creativity (CPS), intelligence was isolated as the only stereotype supported by statistical significance; however, since merely 6% of the variance in creativity was explained by the change in intelligence, there was very weak support for the intelligence stereotype. A 6% predictive value is hardly enough to verify a stereotype; while significance was exhibited, the predictive value was so low, it does not provide

the substantial evidence one would expect in order to conclude the results verify the intelligence stereotype. In addition, a marginally stronger, significant, and inverse relationship was exhibited between Depression and Creative Personality.

When creativity was defined by a cognitive measure (Intellectence), none of the stereotypes were supported. Abstract thinking, as represented by Intellectence, was not significantly predicted by Depression, Affective Intensity, or even Intelligence.

Due to exhibited statistical significance, the depression stereotype was weakly supported when creativity was defined by Origence. While one might interpret this to mean that researchers may be correct in their assumption that highly original people are more likely to be depressed, only 10% of the variance in Origence was explained by changes in Depression. Since ninety percent of the variance in creativity was not explained by the change in Depression, there was no strong support for the depression stereotype.

While the results exhibited a consensus in rejecting the affective intensity stereotype and there was little support for the depression and intelligence stereotypes, there was no unanimity regarding the depression and intelligence stereotypes. Since the present study was exploratory and the first to directly examine the creativity stereotypes, the results should only be considered a first step in discerning the credibility of the traditional assumptions. While the suggestions for future directions in research and practice should be viewed tentatively, they can act as guidelines for future inquiry and practice.

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Appendices

Appendix A: Cover Letter for Informed Consent

Dear Student:

My name is Bryan R. Campbell. I am a graduate student at the University of Calgary in the Department of Educational Psychology. I am conducting research under the supervision of Dr. Sal Mendaglio as part of the requirements towards a M.Sc. degree. I am writing this letter in order to provide information pertaining to my research project, *Cognitive and Affective Dimensions of Creativity Among Artists: Assessment of Creativity Stereotypes*, so that you can make an informed decision regarding your participation.

The purpose of the study is to discern whether or not there is a significant relationship between creativity and emotions and intelligence, and to test the degree to which a common psychological assessment for creativity is valid. The information that is gathered will eventually be related to how educators or counsellors can best adapt their efforts to help creative people.

As part of the study you will be asked to complete four questionnaires. This process will be completed within three hours. You should be aware that even if you give your permission, you are free to withdraw from the study for any reason at any time without penalty.

Participation in this study will not involve any risks greater than those normally experienced in daily life.

Data will be collected in a manner that assures anonymity: All forms will be accounted for before the assessment process concludes, and completed forms will be passed directly to me during the assessment process. Once the forms are collected, they will be kept in strict confidence. The name on your forms will be replaced with a numbering code and be locked in a file cabinet. Only group results will be reported in any published studies. The raw data will be kept in a locked file cabinet and destroyed two years after completion of the study.

If you have any questions, please feel free to contact me at (403) 262-6923, my supervisor, Dr. Sal Mendaglio, at (403) 220-6277, the Office of the Chair, Faculty of Education Joint Ethics Committee at (403) 220-5626, or the Vice-President (Research) at (403) 220-3381. Two copies of the consent form are provided. Please return one signed copy to me and retain the other copy for your records. Thanks for your cooperation.

Sincerely,
Bryan Campbell.

Appendix B: Consent Form for Research Participation

I, the undersigned, hereby give my consent to participate in a research project entitled *Cognitive and Affective Dimensions of Creativity Among Artists: Assessment of Creativity Stereotypes.*

I understand that such consent means that I will take part in completing four questionnaires, which will take less than three hours.

I understand that participation in this study may be terminated at any time by my request or at the request of the researcher. Participation in this project and/or withdrawal from this project will not adversely affect me in any way.

I understand that this study will not involve any greater risks than those normally occurring in daily life.

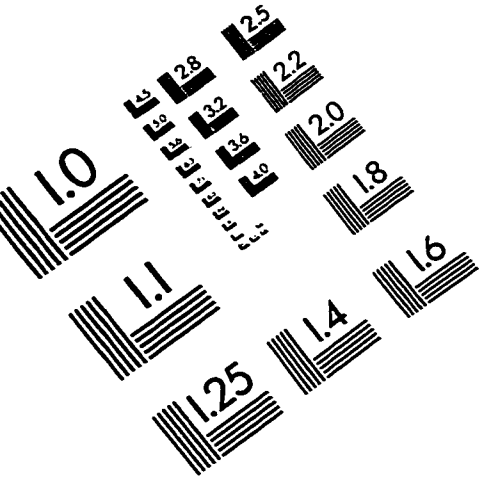
I understand that the responses will be obtained anonymously and kept in strict confidence.

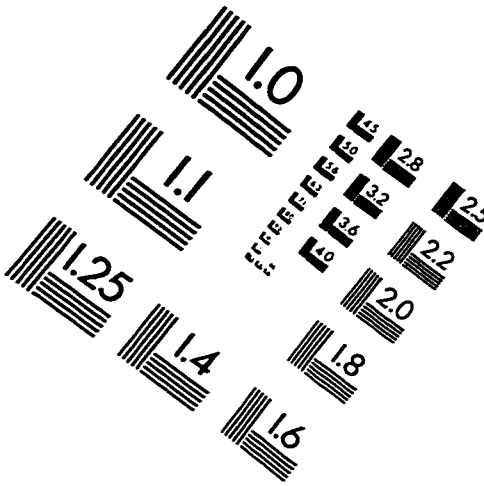
I understand that only group data will be reported in any published reports.

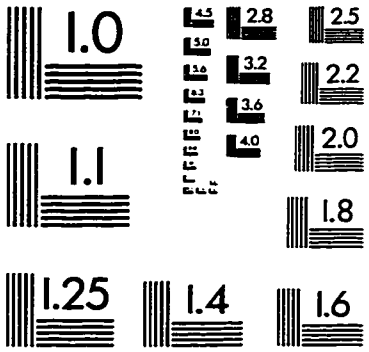
I have received and signed a copy of this consent form for my records. I understand that if I have any questions I can contact the researcher at (403) 262-6923, his supervisor at (403) 220-6277, the Office of the Chair, Faculty of Education Joint Ethics Committee at (403) 220-5626, or the Office of the Vice-President (Research) at (403) 220-3381.

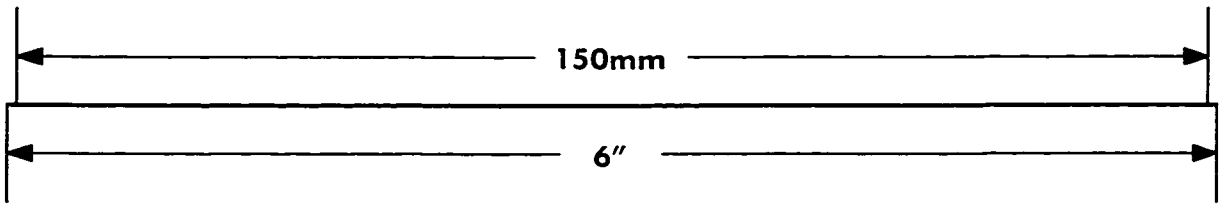
Researcher's Signature	Date
Participant's Signature	Date
Participant's Printed Name	Participant's Phone Number

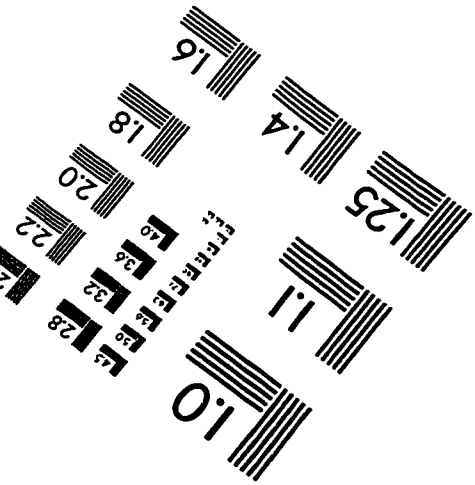
IMAGE EVALUATION
TEST TARGET (QA-3)

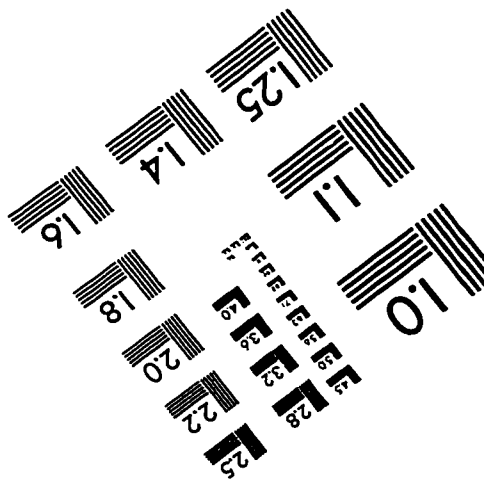












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