

THE RELATIONSHIP BETWEEN PSYCHOSOCIAL
DEVELOPMENT AND DIVERGENT
PRODUCTION IN OLDER
ADULTS

By

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CHAPTER I

INTRODUCTION TO THE STUDY

The fundamental focus of this study was an examination of the relationship between Erikson's psychosocial theory of human development and divergent production in older adults. Erikson's psychodynamic personality theory of psychosocial development involves eight fixed-stages through which one progresses in a lifetime. Erikson's theory is one of the few personality theories to encompass the life-span. When researching older adults, the entire life-span must be taken into consideration to obtain a detailed perspective of development. That is, the past must be examined in conjunction with the present to determine the impact on current development. As a result, Erikson's theory was a justifiable approach to examining development in older adults.

In 1956, J.P. Guilford's factor analytic research in the field of human intelligence lead him to devise a theoretical structure-of-the-intellect (SI) model. While researching the SI model, Guilford theorized that the intellect was composed of five mental operations (i.e., cognition, memory, convergent thinking, divergent thinking, and evaluation). These mental operations are the intellectual basis for creative production. Even though five operations are involved in creative thinking to some extent, Guilford believed that divergent thinking was one of the most important types of productive thinking. Divergent

thinking is essential in generating a wide range of ideas and producing a variety of responses. Guilford (1956) maintained that fluency, flexibility, originality, and elaboration were the underlying processes in divergent thinking. E Paul Torrance developed the Torrance Tests of Creative Thinking (TTCT), standardized tests based on Guilford's divergent thinking processes. In the TTCT, Torrance operationalized creativity as a process leading to divergent production.

Theoretical Foundation of the Study

Erikson's Psychosocial Theory of Human Development as it Relates to Older Adults

The "psychosocial" ideology can be defined as the social influences interacting with a physically and psychologically maturing organism (ReVille, 1989). Via psychosocial development, a connection is made among biological, psychological, and social dimensions. Equal consideration is given to each of these three dimensions and requires their collective participation in human development.

Erik Erikson's psychosocial theory of human development is rooted in Sigmund Freud's psychosexual theory. Both Freud and Erikson believed that man developed through conflict, but Freud emphasized sexual conflicts and Erikson emphasized conflict over self-identity. Freud believed the id (collection of unconscious physiological drives) was the driving force of the personality and, in contrast, Erikson believed the ego (self-awareness) was the driving force. Erikson's theory is similar to Freud's in that they are both fixed-stage theories which are linked to age norms. One discrepancy between the two theories is that Freud's theory of human development ceases at puberty and Erikson's theory encompasses the entire life cycle. Erikson was the first psychologist to theorize and study the entire human life cycle. When studying development of older adults, a life

cycle theory intuitively appears to be a more sensible approach.

Erikson's life cycle theory consist of eight bipolar fixed-stages. The eight stages or the "eight ages of man" in chronological order are: (1) Trust versus Mistrust; (2) Autonomy versus Shame and Doubt; (3) Initiative versus Guilt; (4) Industry versus Inferiority; (5) Identity versus Identity Confusion; (6) Intimacy versus Isolation; (7) Generativity versus Stagnation; and (8) Ego Integrity versus Despair. Each stage is associated with specific ages (refer to Table 2 in Chapter II), however, all eight bipolar stages exist throughout life, to varying degrees. Each stage represents the dominant conflict during that period of life. The stages can be examined individually or collectively. A collective examination of the stages or the interrelatedness of the stages is the basis of Erikson's epigenetic principle.

Epigenetic Principle

The term "epigenesis" as defined by Erikson, Erikson, and Kivnick (1986) connotes the space/time nature of all development (Erikson, 1986). Theoretically, Erikson's (1959) epigenetic principle implies that "anything that grows has a ground plan, and that out of this ground plan the parts arise, each part having its time of special ascendancy, until all parts have risen to form a functioning whole" (p. 52). To Erikson, the parts were the eight stages and the functioning whole was the cooperative function of all eight stages.

The epigenetic principle assumes that there is an innate foundation for development which occurs in a determined sequence until there is a "functioning whole". Figure 1 is a matrix consisting of all eight stages in their epigenetic sequence from early infancy (Trust versus Mistrust) to late adulthood (Ego Integrity versus Despair). In

Figure 1, the stair-step sequence of development is evident as presented in the diagonal of the matrix. The empty cells preceding any stage (upper diagonal) contain remnants of

Figure 1

Epigenetic Sequences of Erikson's Eight Psychosocial Stages of Life

							Integrity versus Despair
						Generativ- ity versus Stagnation	
					Intimacy versus Isolation		
				Identity versus Identity Confusion			
			Industry versus Inferiority				
		Initiative versus Guilt					
	Autonomy versus Shame						
Trust versus Mistrust							

Note. Adapted in part from Erikson (1986).

previous stages. The empty cells following any stage (lower diagonal) contain conflicts that have not yet been directly confronted. Overall, Figure 1 shows that the individual is

In terms of development over time, the overall developmental status of old age cannot be reevaluated without considering how infancy created the conditions for a potentially viable old age, and how old age may bring to fruition what each stage of life may have to contribute to the subsequent ones (Erikson & Erikson, 1978). This progression reflects the importance of the epigenetic principle as it relates to older adults. According to Erikson and Erikson (1978), there should be a Three Way Alliance between the old, the middle aged, and the young.

Measurement of Human Development within an Eriksonian Framework

Eriksonian theory was employed in this study because it is a theory of human development that covers the entire life-span. There have been numerous attempts to operationalize and measure Erikson's theory (e.g., Constantinople, 1966; Gordon, 1967; Marcia, 1964; Wessman and Ricks, 1966). The majority of the instruments developed to assess psychosocial development within an Eriksonian framework measure either the first five (e.g., Greun, 1960; Marcia, 1964; Thayer, 1963), six (e.g., Boyd, 1964; Caillet, 1980), or seven (e.g., Prelinger and Zimet, 1964) stages. Whereas a few instruments measure the latter stages (e.g., Boylin, Gordon, & Nehrke, 1976; Joyce, 1970), very few measure all eight stages (e.g., Boyd, 1966; Gordon, 1967; Gruen, 1964). Due to the lack of instrumentation assessing psychosocial development across the life-span, there has been little quantitative research of Erikson's epigenetic principle. There are few scales extensively used in research that produce an overall psychosocial development index which reflects the epigenetic principle. One viable scale appears to be the Measures of Psychosocial Development (MPD) (Hawley, 1988).

The MPD employs measures of resolution for all eight bipolar stages (i.e., R1, R2,

R3, R4, R5, R6, R7, and R8) and overall or total resolution (i.e., TR). A resolution score indicates the degree to which one has successfully or unsuccessfully resolved specific stages or all the stages. At the stage level, degree of resolution is established based on responses to items measuring the construct underlying each stage. Because the stages are hierarchically ordered, overall psychosocial development is established based on the degree of resolution across the eight stages. In other words, the resolution of each stage and the final stage should be contingent upon previous stage(s) resolution. As a result, regardless of age, when examining psychosocial development all eight bipolar stages should be considered.

Issues Related to Creativity

The Field of Creativity

Creativity has been of interest to researchers for more than four decades (e.g., Alpaugh & Birren, 1977; Guilford, 1959; Isaksen, 1987; Torrance, 1962; Wehner, Csikszentmihalyi, & Magyari-Beck, 1991). The field of creativity began taking shape when J.P. Guilford presented his Presidential Address to the American Psychological Association in 1950. This presentation included a report of a survey of the field of creativity and its problems. Guilford's presentation on the multiple dimensions of intelligence sparked interest in research on creativity. Guilford's (1950, 1959, 1977) research interests were in human intelligence which resulted in a model of the structure-of-the-intellect (SI). This model, conceptually, is a broad overview of intellectual abilities including contents, products, and operations (Isaksen, 1987).

Defining and Measuring Divergent Thinking

The concept of divergent thinking was a result of J.P. Guilford's research and the

SI model. While researching creativity, Guilford identified several intellectual abilities (i.e., fluency, flexibility, originality, and elaboration) which have collectively been labeled divergent thinking. Divergent thinking is the ability to produce a diversity of responses to an open-ended problem. Divergent thinking is the most widely used approach to studying creativity (Hocevar, 1981). As a result of Guilford's research, creativity is often operationalized as the processes underlying divergent thinking. A myriad of tests have been developed by Guilford and others (e.g., Christensen, Guilford, Merrifeild, & Wilson, 1960; Torrance, 1974; Wallch & Wing, 1969) to measure divergent thinking. Tests of divergent thinking require a multitude of responses, rather than a single correct answer. For instance, on the Torrance Tests of Creative Thinking: Figural Form A (TTCT-FFA) developed by Torrance and Ball (1984), the subject is asked to make pictures out of a series of parallel lines. Through the divergent thinking process, one must make as many pictures as possible out of the parallel lines. There are no "correct answers" to the parallel lines activity, but there are more or less creative solutions. Guilford (1968) and Torrance (1974) have suggested that the more creative individual should possess the types of abilities measured by tests of divergent thinking.

The Theoretical Link between Eriksonian Theory and Creativity

When studying divergent production in older adults, the social impact must be considered as well. For instance, Csikszentmihalyi (1990) noted that creativity or even measurement of creativity should not be considered without first taking into account the social aspects that influence creativity. In light of this recommendation, the current study investigated divergent production and Erikson's psychosocial theory simultaneously.

In *Childhood and Society* (1963), Erikson suggested that creativity may be set by

the third stage (Initiative versus Guilt) or fourth stage (Industry versus Inferiority); however, it may be outwardly expressed at various stages throughout the life cycle depending on one's overall psychosocial development. Thus, by examining the relationship between creativity and each stage of psychosocial development, it can be determined which conflicts impact divergent thinking and in turn, divergent production. ReVelle (1989) stated that older adults experience something that younger people cannot: a personal sense of the entire life cycle. For example, the seventh stage (Generativity versus Stagnation) is associated with middle adulthood. Erikson and Erikson (in Spicker, Woodward, & Van Tassel, 1978 p. 4) indicated that Generativity was the commitment to progeny, production, and creativity. Generativity indicates that something old is passed on while creativity indicates that something new comes into being. In other words, a personal sense of the life cycle, as suggested by ReVelle, helps older adults who are at the seventh stage to create something new to pass on to later generations.

Psychoanalysts (i.e., Freud) tend to emphasize the role of childhood in the development of creative ability, while minimizing or even entirely overlooking the role that social factors, including marriage, play in developing the ego in the service of creative insight (Arasteh & Arasteh, 1976). Arasteh and Arasteh (1976) indicated that one way to attain the state of creativity is to develop a high degree of maturity in rationality to the extent that one can realize the role of reason and intelligence in life. Their suggestion supports the notion creativity exists in older adults. Arasteh and Arasteh also state that as the ego develops, creative insight is heightened. Therefore, it would make intuitive sense that adults can be and are creative because they should have a more developed ego than younger individuals. During the mature years, creativity becomes an expression of life in

that the adult has to combine vocation and avocation in order to create leeway for themselves while creating leeway for those within their scope of mutuality (Arasteh & Arasteh, 1976).

Creativity Across the Life-Span

In the literature, there appears to be controversy concerning the issue of creativity across the life-span. Lehman (1953) theorized that creativity within any field increases until age 30, then steadily decreases until age 40 when it drastically decreases and continues to do so through later adulthood. Lehman reported that exceptional lifetime creativity is linked with aptitude, longevity, and high productivity rates. In other words, it has been suggested that creativity peaks in early to middle adulthood and then continually decreases through old age. This does not imply the creative process declines in later adulthood, only that it is not apparent.

In response to Lehman's life-span theory of creativity, Pruyser (1987) argued that old age may move some persons toward a late-life creativity. In addition, Smith and van der Meer (1990) found creativity to be a key factor in aging. They stated that creative individuals have a less negative attitude toward aging and do not unequivocally close the door to life after death. In light of the controversy concerning creativity and the aging process, there is a need for additional research on creativity in later adulthood. When examining creativity from a personality perspective, Dacey (1989) found that there were peak periods during which evidence of creativity was present. These peak periods are shown in Table 1. As noted in this table, there are six peak periods during which creativity may be exhibited from the age of 0 to 65 for both males and females. Inclusion of the sixth peak period in Dacey's theory suggests that creative potential is present during

Table 1

Peak Periods of Creativity

	Males	Females
1.	0-5 years old	0-5 years old
2.	11-14 years old	10-13 years old
3.	18-20 years old	18-20 years old
4.	29-31 years old	29-31 years old
5.	40-45 years old	40(37?)-45 years old
6.	60-65 years old	60-65 years old

later adulthood which in turn indicates the creative process is present too. Dacey's fifth and sixth period conflict with Lehman's theory that creativity begins decreasing at age 30. In any case, due to the controversy within the field of creativity, a more thorough examination of the sixth peak period appears to be warranted. Further, research on creativity among older adults will supply evidence for the usefulness and potentially creative contributions of older persons to the maintenance and well being of a healthy and enriched society (Romaniuk, 1978).

Significance of the Study

The Aging Population

The aging process is a definite and irreversible one. In earlier centuries when life expectancy was around age 32, one's demise would closely follow child rearing. With the rapid advances in the field of medicine, life expectancy is increasing every decade. For instance, expectation of life in 1991 was 75.5 years (U.S. Department of Commerce, 1992) and longevity in 2050 is expected to approximate 100 years (Siegel & Taeuber, 1986). As a result, the average age in the population is increasing. The median age in 1980 was 30.0, 32.8 in 1990, and 33.1 in 1991 (U.S. Department of Commerce, 1992).

In 1991, 25.4% of the population of the United States was 50 years old or older (U.S. Department of Commerce, 1992). With approximately one-fourth of the population working on the eighth and final stage of development, there is definitely a need for exploring this population more closely.

With the "baby-boomers" nearing retirement age, there will be a disproportionate number of the population dealing with the trials and tribulations of older adulthood. If the median age continues to increase approximately three years every decade, by the year 2050 the median age of the United States population will be 50.8 years. This median age would put half of the population in Erikson's seventh (Generativity versus Stagnation) or eighth (Ego Integrity versus Despair) stage. As a result, with the increasing number of those in the older adults population, there is now a need to advance knowledge of development in old age.

Wellness/Health

The overall wellness of older adults is enhanced if they are allowed to express themselves creatively. For instance, it has been found that the attitudes of creative elderly adults (mean=72 years) toward aging was less negative and their attitudes toward illness less defensive than their non-creative peers (Smith & van der Meer, 1990). In addition, Dawson and Baller (1972) found a positive relationship between engagement of elderly persons in creative endeavors (i.e. oil painting) and their condition of health as they relate to longevity. Goff & Torrance (1991) found that older adults who participated in a "Quality of Life" program significantly increased their "quality of life" when compared to older adults who had no such program. The purpose of the Quality of Life Program was to increase the independence of older adults (with and without developmental disabilities),

and to integrate them into the community through physical and expressive activities designed to improve fitness, creativity, and quality of life. More recently, Goff & Torrance (in press) stated that valuing and developing the creativity of older adults will raise their levels of wellness and overall happiness. An older adults' level of wellness may impact psychosocial development in that, if one employs a "healthy" attitude toward life, crises can be resolved more efficiently and progress toward a healthy psychosocial development.

According to The Retirement Handbook (Buckley & Schmidt, 1977), gerontologists point out that the number of years we live is largely tied up with factors such as heredity and environment. Buckley and Schmidt (1977) suggest that creative capacities are also tied to longevity. By utilizing creative abilities in the later years, new skills and interests can be developed. With the development of new skills and interests, a positive channel will be formed in which strength, energy, and idealism can be guided during the later years of life. These factors have also been shown (Buckley & Schmidt, 1977) to increase the life-span. In other words, creativity in any form is essential in maintaining a sense of purpose and personal value. Buckley and Schmidt (1977) go on to say that new experiences keep life exciting, helps one stay out of deepening ruts, and keeps one from the rigidity from which so many older people suffer. The need to study creativity with older adults is apparent.

Rationale for Encouraging Creativity in Older Adults

It is suggested that the elderly be encouraged to seek their own creative outlet, and to utilize their vast store of experience in a manner that will enhance their lives and keep them in more meaningful contact with reality (Parris, 1986). Erikson (1986) states that

"an opening up of [the] area of creativity and stimulation can greatly enrich the elder both intellectually and aesthetically." (p.317). He goes on to state that "...many people think they have no creative ability, but this is largely the result of cultural conditioning . . . [but] for the aging, participation in expressions of artistic form can be a welcome source of vital involvement and exhilaration" (p.318) . Erikson (1986) also pointed out that "...at the end of life, when [older adults] recognize that time to nurture their early-subordinated, long-stagnant interests is running out, several of [them] have difficulty coming to terms with the ways they have not expressed their creativity" (p.84). Erikson's statements imply that encouragement of creative expression can positively aid in the aging process. Encouraging creative expression in older adults may enhance the quality of life and ease the common pains associated with the aging process.

Definition of Terms

1. Stage Resolution

In this study, the discussion of human development relies on stages or progressions, as specified by Erikson. Erikson theorizes that there are stages through which one must progress in order to develop psychosocially and, perhaps, creatively. In addition, the crisis at each stage of psychosocial development results in either one proceeding to the next stage or stagnating at a stage and resolving the crisis. The resolution of each bipolar stage is not that positive (e.g., Trust) prevails over negative (e.g., Mistrust) but that a "healthy" ratio exist between the two. Resolution was measured at each of the eight stages (R1 to R8) and overall or total resolution (TR) from scales on the MPD.

2. Divergent Production-Divergent Thinking

Divergent production is the intellectual basis for creative production. Creative production is a result of divergent thinking during the creative process. Therefore, divergent production and divergent thinking are both directly linked to creativity and the creative process.

Creativity is a term which has no universally agreed upon definition, researchers typically employ one of the many definitions that already exist in the field of creativity research. A process definition of creativity was employed in this study in order to investigate divergent production. The creative process (i.e., divergent thinking) was assessed by the most widely used and accepted test of divergent thinking (Ball & Torrance, 1984), the TTCT. In the TTCT, Torrance (1974, p. 8) defined creativity as the process of

... becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies; testing and retesting these hypotheses and possibly modifying and retesting them; and finally communicating the results.

Further creativity definitional issues are presented in Chapter II and rationale for use of the TTCT is discussed in Chapter III.

3. Older adult

In the current study, this term refers to adults, both male and female, 50 years old and older. This age group was chosen because according to Erikson's theory, approximately by age 50 one should be in the final stage of the life cycle. In general, those

50 and older should have experienced the entire life cycle or be in the final stages .

Purpose of the Study

The purpose for conducting this study was three-fold. First, to determine if the MPD total resolution score (TR) or the stage resolution scale scores (R1 through R8) of older adults yielded results in conjunction with Erikson's epigenetic principle. Second, to find out if there was a relationship between psychosocial development and divergent production in older adults. Third, to determine if there were gender pattern differences in the relationship between psychosocial development and divergent production in older adults.

Statement of Research Questions

The specific research questions addressed in this study sought to determine if:

(1) the total resolution score (TR) or stage resolution scores (R1 through R8) of older adults on the Measures of Psychosocial Development (MPD) were consistent with Erikson's epigenetic principle. Specifically, were the stages hierarchically related and were the stages more related to adjacent stages than to non-adjacent stages.

(2) there was a relationship between stage resolution according to Eriksonian theory and divergent production in older adults; and

(3) there was a gender pattern difference in the relationship between stage resolution according to Eriksonian theory and divergent production in older adults.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

This chapter reviews the literature relevant to the issues pertaining to psychosocial development and creativity of older adults. Psychosocial issues discussed include Erikson's theory of human development, the epigenetic principle, crisis resolution, psychosocial development of the older adult, and measurement of psychosocial development. Creativity issues discussed include definitional issues, creativity across the life-span, creativity or conformity, and assessment of creativity. Finally, the use of older adults as research subjects is discussed.

Psychosocial Issues

Erikson's Theory of Human Development

One of the earliest perspectives of human personality development was that of Sigmund Freud. Freud viewed human development from a psychosexual-psychoanalytic perspective. In 1900, Freud (in Strachey, 1963) described the human personality as being composed of three interacting systems: id, ego, and superego. The id is the part of the personality structure that seeks immediate gratification, totally unconstrained by reality, while the ego seeks to gratify the id's impulses in realistic ways that will bring pleasure rather than pain or destruction. The superego is like the parent striving for perfection and

judges actions, accompanied by feelings of guilt or pride. According to Freud, the id and the superego are constantly at struggle while the ego acts as the mediator. Freud's work as a psychoanalyst led him to the conclusion that the human personality was shaped in the first few years of life. As a result, Freud theorized there were five psychosexual stages which children from birth through puberty pass through. Erik Erikson formulated his personality theory of psychosocial development out of Freud's theory of the personality structure. Erikson (1968b) stated:

My psycho-social conception of the life cycle was originally based on Freud's clinical break-through into the early stages of life, in which he found the origin of neurotic disturbance. I developed some of what I learned, asking: if we know what can go wrong in each stage, can we say what should have gone and can go right? (p.286)

There are three major differences between Erikson's and Freud's theory. First, Erikson believed that life's developmental stages encompass the life-span, whereas Freud's psychosexual stages cease at late puberty. Second, Erikson (1963, 1986) believed the ego rather than the id related to society. Third, unlike Freud, Erikson focused on the positive aspects of development.

Erikson's primary contributions to the study of human personality development are: psychosocial stages of ego development which parallel the psychosexual stages described by Freud; the theory that personality development continues throughout the entire life cycle; and that at each stage of development there are positive as well as negative facets. The stages of psychosocial development that were theorized by Erikson are listed in Table 2. As noted there, Erikson delineates positive and negative attitudes for

each stage. The developmental period associated with each of the eight stages is listed in this table as well. Three examples of developmental periods are listed in order to demonstrate the lack of agreement among the specific ages associated with each of the eight stages. It would be assumed that ages for each stage would vary among individuals due to the diversity of human development, which may be why Erikson (1963) originally assigned labels to the stages as opposed to specific ages. In any case, there are often chronological ages assigned to the stages. For example, in psychology textbooks, the chronological ages assigned to the stages are often inconsistent as shown in Table 2. Some stages even have discrepancies of fifteen years! Obviously, certain development features occur in the younger years of life; however, human development does not suddenly slow down after puberty. For instance, most physical attributes develop early in life but, in contrast, social and psychological development continue to occur well into late adulthood.

Erikson's stages of human psychosocial development can be described as follows:

Stage 1 - Trust versus Mistrust. Trust is defined as an essential trustfulness of others and a fundamental sense of one's own trustworthiness. The development of basic trust is believed to be the cornerstone of vital personality.

Stage 2 - Autonomy versus Shame and Doubt. Autonomy is the courage to be an independent individual able to choose and guide one's own future. It develops out of a sense of self-control without the loss of self-esteem. Shame and doubt result from the over control of parents and the feeling that one is losing self-control. The development of autonomy requires a firmly developed early sense of trust.

Table 2

Erikson's Stages of Psychosocial Development

Developmental Period	Positive Attitude	Negative Attitude
1 Early Infancy ¹ first year ² 0-1 1/2 ³ birth-1	Trust	Mistrust
2 Late Infancy ¹ second year ² 1 1/2-3 ³ 1-3	Autonomy	Shame and Doubt
3 Early Childhood ¹ 3-6 ² 3-6 ³ 3-6	Initiative	Guilt
4 Middle Childhood ¹ 6-puberty ² 6-puberty ³ 6-12	Industry	Inferiority
5 Adolescence ¹ puberty-18 ² adolescent ³ 12-20	Identity	Identity Confusion
6 Early Adulthood ¹ 18-25 ² early adult ³ 20-40	Intimacy	Isolation
7 Middle Adulthood ¹ 25-50 ² middle adult ³ 40-65	Generativity	Stagnation
8 Late Adulthood ¹ 50-death ² later adult ³ old age	Ego Integrity	Despair

Note. Developmental periods in bold are from Erikson (1963).

1. Myers, D.G. (1989). Psychology (2nd ed.). New York: Worth Publishers, Inc.
2. Zimbardo, P.G. (1988). Psychology and Life (12th ed.). Glenview, IL: Foresman & Co.
3. Schaffer, D.R. (1989). Developmental Psychology. Pacific Grove, CA: Brooks-Cole.

Stage 3 - Initiative versus Guilt. A sense of initiative is the basis for a realistic sense of purpose and ambition. At this stage, individuals try to comprehend the possibility of future roles or to discern what roles are worth envisioning. The prerequisites for future identities develop during this stage such as femininity , masculinity , and sexuality.

Stage 4 - Industry versus Inferiority. Individuals begin to compare themselves to others and to evaluate their own skills and accomplishments during this stage. They attach themselves to others (e.g., teachers or parents) who represent occupations which they can understand -nurses, doctors, police officers, or teachers. Positive resolution of the stage results in the development of self-confidence and recognition of self as a productive and industrious individual while negative resolution results in an inferiority complex.

Stage 5 - Identity versus Identity Confusion. This stage is concerned with the formation of an inner identity or feeling of wholeness as opposed to identity confusion. An important factor in the development of identity is the choice of a career. The development of a firm sense of inner identity allows for continued, adult maturation.

Stage 6 - Intimacy versus Isolation. True intimacy is not possible unless the process of developing an identity is well on its way. The ability to risk one's identity through sharing true intimacy with others reflects positive resolution of this stage. Failure to resolve this stage results in isolation.

Stage 7 - Generativity versus Stagnation. Positive resolution of this stage involves developing a concern for establishing and guiding the next generation. Negative resolution of this stage results in a sense of stagnation, boredom, and lack of interpersonal improvement.

Stage 8 - Ego Integrity versus Despair. Individuals who possess integrity are ready to defend their own life and genuinely satisfied with their past. Negative resolution of this stage results in despair and regrets concerning one's life.

Erikson's eight stages of psychosocial development are primarily concerned with development in the early years of life (stage one to stage five), but he has briefly considered adult development (stage six to stage eight) which is why his theory is somewhat unique. In order to illustrate the relationship among the eight stages, consider the following analogy. Visualize the eight stages as vertically stacked teeter-totters (G.A. Hawley, personal communication, March 14, 1993). For instance, when one is born they have no teeter-totters but shortly there after, as they progress through the stages a new teeter-totter is added until, in late adulthood, there are eight. The balance of all eight teeter-totters is continually being threatened due to conflicts or crises that arise. If a stage is successfully resolved then the teeter-totter is weighted more on the left (positive), but if a state is not successfully resolved then the teeter-totter is weighted more on the right (negative). An earlier stage may be successfully resolved (i.e., weighted on the left), but as conflicts occur in later life one may be forced to regress to that stage which will off set the balance and result in an unsuccessful resolution (i.e., weighted on the right). As a result of these crises, the system never remains in a stable state, but rather shifts from a stable state to a state of disequilibrium with each new crisis that occurs.

Disequilibrium may result in maldevelopment or malignancy. Maldevelopment refers to the tendency to overdevelop the positive attitude in an attempt to let the negative attitude decline. In terms of teeter-totters, all the teeter-totters would be weighted on the left (positive attitude) if maldevelopment occurs. Malignancy refers to the tendency to

overemphasize the negative attitude with a threatening loss of the positive attitude. Again, in terms of teeter-totters, all the teeter-totters would be weighted to the right (negative attitude) if malignancy occurs. Psychologists would refer to those who over-develop (the teeter-totters are all weighted to the left) as "neurotic" and those who under-develop (the teeter-totters are all weighted to the right) as "psychotic" (Erikson, 1950). In any case, the most appropriate developmental solution would be for the all the teeter-totters to be equally balanced. This equality would indicate a favorable ratio between the positive and negative attitude. In the current study, stage resolution was evaluated as a matter of degree [i.e., the stage resolution score (R1 through R8) on the MPD] and not necessarily as a dichotomy (e.g. resolved or unresolved).

Epigenetic Principle and Crisis Resolution

Most personality theories generally do not consider the entire life-span which is the basis of Erikson's (1963) epigenetic principle. According to this principle, every being has a ground plan from which development of certain parts begin. Each part will make itself known at a certain time, and ultimately will emerge to form a functioning whole. The human personality develops according to predetermined steps which interact with society. Each successive stage enables the individual to engage in more complex activities and interpersonal relationships than in the preceding stage. These predetermined steps that make up the epigenetic whole are the eight bipolar stages previously discussed (see Table 2).

The word "crisis" is used by Erikson (1964) in a developmental sense to connote not a threat of catastrophe but a turning point, a crucial period in which a decisive turn one way or another is unavoidable. During each of these stages, the ego faces a

psychosocial crisis which is resolved either more positively (e.g., Autonomy) or more negatively (e.g., Shame and Doubt) manner which influences subsequent ego development. At a certain point in time an individual is propelled from the present stage into the next development stage regardless of resolution at the present stage.

Unsuccessful resolution of the crisis generally prevents successful resolution of succeeding stages. Thus, the resolution of a crisis creates a divorce of the two end points of the scale and results in progression into the next stage. Furthermore, a more positive resolution at one stage increases the chances that individuals will be able to resolve crises at later stages.

Erikson emphasized that for healthy development of the ego, the successful resolution of a crisis includes remanent of less successful resolutions. Finally, each crisis exists in some form before it becomes "phase-specific" and the resolution of each crisis exists as an active dimension of the ego as new crises are met. Therefore, a crisis may not be resolved once and for all. Erikson optimistically believed that the general tendency was toward resolving the crisis by establishing a strong self-identity (Erikson, 1950).

Erikson (1968a) believed that

... all such developmental and normative crises differ from imposed, traumatic, and neurotic crises in that very process of growth provides new energy even as society offers new and specific opportunities according to its dominant conception of the phases of life (p. 163).

Although Erikson was optimistic that there is an inherent tendency toward successful resolution of the developmental crises, resolution is greatly influenced by the quality of previous psychosocial experiences (Erikson, 1968a). He viewed people as actively

attempting to deal with their experience in a constructive manner while acknowledging that experience can place limits and hindrances on growth (Erikson, 1964).

Psychosocial Development of Older Adults

According to Erikson, Erikson, and Kivnick (1986), as humans develop psychosocially they strive for hope, will, purpose, competence, fidelity, love, care, and wisdom, respectively. By the time one reaches the final stage (Integrity vs. Despair) they are attempting to reconcile the earlier psychosocial themes and to integrate them into old age. Older adults are challenged to draw on a life cycle that is far more completed than yet to be lived, to consolidate a sense of wisdom with which to live out the future, to place him- or herself in perspective among those now living, and to accept his or her place in an infinite historical progression (Erikson, 1986). In other words, older adults have to use wisdom and other virtues earned to confront the future and accept the past.

By the time one reaches old age he\she will have encountered many crises and resolved these crises in order to progress through the stages. These conflicts are struggles with specific manifestations of anxiety at each stage and are partial regressions to earlier conflicts (Erikson & Erikson, in Spicker, Woodward, & Van Tassel, 1978 p. 5). Men and women can begin to face the issues they may have neglected in their forties and fifties, realizing that social commitments have been closing in on their choices and chances. In *Identity, Youth and Crisis* (1968), Erikson conceives of old age as a period for summarizing one's experiences, primarily one's past experiences, as evidence of one's ultimate identity and integrity. During middle age one may have been very active in parenting, working, and preparing the world for the next generation. As age increases, however, that person may take a more passive or inactive role. This role change may

create a psychosocial disequilibrium. Older adults often must relinquish many of their responsibilities to the younger generation and trust that the world will still function. They may start living vicariously through their children or grandchildren. Their familial relationships may change as well. For example, they were once a child who depended on a parent, then a parent, now a child again with their child acting as the parent. This process indicates that developmental progression may follow more of a cyclical pattern than a vertical one. Erikson (1986) explains this cycle of life as follows:

... a civilization can be measured by the meaning which it gives to the full cycle of life, for such meaning (or lack of it) cannot fail to reach into the beginnings of the next generation and thus enhance the potentiality that others may meet ultimate questions with some clarity and strength (p. 609).

Erikson (1986) called the stages at later life generational which included parental and instructive, productive, creative, and curative endeavors. However, at every stage in the psychosocial life cycle, the individual is trying to incorporate a creative balance.

Measurement of Psychosocial Development

According to Ryff (1982), Erikson's (1959) model of ego development is the most widely used theory of life-span development. Empirical research on middle and late adulthood utilizing Eriksonian theory has generally been applications-oriented, rather than measurement-oriented. The only published study found using a measure of either Generativity or Integrity in a non-validation-related setting was a study of reminiscing and Ego Integrity in institutionalized elderly males (Boylin, Gordon, & Nehrke, 1976).

There are several difficulties with the nature of Erikson's theory which makes it hard to operationalize. Some of these difficulties are due to the lack of clarity regarding

stage constructs and gender differences in development (Euler, 1990). Miller (1989), suggested that "Erikson's theory is a loose connection of observations, empirical generalization, and abstract theoretical claims [which] are laden with interpretations that are difficult to evaluate" (p.193). This analysis points out the difficulty with measuring Erikson's theory.

Nevertheless, considerable research has been conducted using Erikson's theory of personality development (Hawley, 1985). Since 1950, when Erikson first proposed his theory, over forty attempts have been made to measure some, or all, of his eight stage constructs. Hawley (1985), after reviewing available measures, concluded there were none available that adequately conceptualized and measured Erikson's eight-stage formulation. Her study led to the construction of the Measures of Psychosocial Development (MPD). Convergent and divergent construct validity of the MPD have been evaluated by Hawley (1985), developmental construct validity by Roid & Ledbetter (1987), and factorial validity by Euler (1990). In Chapter III, further psychometric properties of the MPD are presented.

Creativity Issues

Definitions of Creativity

There is a lack of consensus among researchers concerning a central theory of creativity. Since "creativity" has no commonly agreed upon definition, it would prove difficult to develop a widely accepted central theory. With insufficient agreement between both researchers and educators on a definition of creativity, the field has lacked the progress that other fields have established (e.g., human intelligence). To illustrate this disagreement, some examples of definitions of creativity offered by those who were

pioneers in the field are presented next.

Mooney (1963) indicated that the approach one takes to defining creativity depends upon the aspect a person uses to "gain his initial hold" (p.335). As a result, the approach one takes toward researching creativity is dependent on the researchers definition of creativity.

The varying and sometimes inconsistent perspectives of creativity have resulted in a myriad of definitions appearing in the literature. In 1961, Rhodes found more than 56 different definitions of "creativity". He explained the situation as follows:

... as I inspected my collection I observed that the definitions are not mutually exclusive. They overlap and intertwine. When analyzed, as through a prism, the content of the definitions form four strands. Each strand has unique identity academically, but only in unity do the four strands operate functionally. (p.307)

The four strands Rhodes referred to are *person* (personality, intellect, traits, attitudes, values, and behavior); *process* (stages of thinking people go through when overcoming an obstacle or achieving a goal); *product* (characteristics or artifacts or outcomes of new thoughts, inventions, designs, or systems); and *press* (the relationship between people and the environment, the situation and how it affects creativity).

Organization of these different strands or perspectives appears to have been necessary for the field to progress. For research purposes, the specific definition used by the researcher must be clearly identified. Since divergent production (i.e., divergent thinking) was assessed in this study, the creativity process was measured. The creativity process was measured via the TTCT-FFA. Torrance's process definition of creativity is the overriding definition for the current study. As stated in Chapter I, Torrance (1966)

defined creativity as:

... a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies: testing and retesting these hypotheses and possibly modifying and retesting them; and finally communicating the results. (p.6)

Torrance (1990) defends his definition of creative ability as follows:

by labeling such abilities as sensitivity to problems or deficiencies, fluency, flexibility, originality, elaboration, and redefinition as creative, the author has run the risk of being accused of equating creativity with all thinking. Yet as thinking is an extremely complex mental process, it does not at all seem strange that these abilities might at some time enter to some degree into any type of thinking. On the other hand, these abilities are more predominant or crucial in creative thinking than in other types of thinking and problem solving. (p. 2)

By employing the TTCT-FFA as a catalyst for assessing divergent thinking, a process definition of creativity was inherently used. As a result, discussion on the creative personality, creative product, and the creative environment was not addressed in this study however, issues related to the creative process are presented next.

The Creative Process

The earliest cited definition of creativity within the creative process realm was by Wallas (1926). Wallas stated that there are four distinct stages in the creative process.

The first stage is that of preparation, where the problem to be solved is detected and data relevant to it are identified. The second stage is incubation, where data gathering is continued, then it is essential to leave the problem alone. Efforts to solve the problem must be allowed to sink into the unconscious mind. The third stage is that of illumination, where suddenly the ideas, solution, or new relationship emerges. The fourth stage is realization that the idea is new and appealing. In 1975, Gowan described Wallas' stages more clearly as: input, relaxation, output, and product.

The idea that creative process occurs in stages has been accepted by some (i.e., Helmholtz, 1896; Stein 1974) and rejected by others (i.e., Vinacke, 1952). In various case studies, Vinacke (1952) noted the recurrence of some stages during the production of creative work. Regardless of the disagreement, the creative process is most often defined as occurring in stages, perhaps because stages can be based on observation. There is virtually no other way to measure the creative process than via observation.

From a psychoanalytic perspective, Arieti (1976) noted that the creative process could be defined as the role of incubation of ideas and other unconscious and preconscious influences as inferred events (Barron, 1963; Freud, 1908; Parnes et al., 1977). Or, the creative process involves new ways of seeing, obtaining a different point of view, creating an original idea or a new relationship between ideas (McCaslin, 1984).

May (1983) defined creativity as the process of bringing something new into being. Similarly, Davis (1983) described creativity as the process of combining previously unrelated ideas or perceiving a new relationship from previously unrelated ideas. Knapp (1978) viewed creativity as a continuous process which can disappear if analyzed too meticulously. Ghiselin (1952) defined creativity as an underlying process which is

divergent yet productive. Again, divergent thinking skills were measured as creative process skills.

In review, these theorists suggest that creativity involves a process that occurs in stages and that the creative process is very much the same across all persons. However, the researcher defines the creative process, the next step is to select specific behaviors for observation.

Creativogenic Factors. Melrose (1989) suggested that certain environmental factors may enhance the probability of the creative process occurring. Some of these Creativogenic factors may be: availability of cultural means; openness to cultural stimuli; stress on becoming and not just being; exposure to different and even contrasting cultural stimuli; tolerance for diverging views; and interaction of significant persons (Areti, 1976). Arieti (1976) stated that these factors are unlikely to coexist, and that only the availability of cultural means is essential to the creative process. When assessing the creative process of older adults, the cultural experiences must be considered as they were in this study by incorporating a psychosocial development theory.

Creativity Across the Life-Span

The majority of creativity research is conducted with children or young adults (Clark, 1983; Fishkin, 1989; Seagoe, 1975). There appears to be a lack of research with older adults or more specifically, creativity across the adult life-span. Cohen (1986) noted that "generic studies pertaining to the question of life-span creativity development are scarce" (p.1). In a review of the literature, Dacey (1989) reported the existence of one theoretical article (Lesner & Hillman, 1983) about the development of creativity across the life-span. Dacey (1989) goes on to state that there have been studies conducted on the

course of creative output across the life-span and they are usually done by studying the productivity of groups of people of different ages. For example, most researchers have studied individuals or groups of individuals such as artists (Lowenfeld, 1941), scientists (Lehman, 1953), classical composers (Simonton, 1977), architects (MacKinnon, 1964), and independent inventors (Albaum, 1976).

Lesner and Hillman (1983) offered three stages that were a "logical sequence of representing the life cycle of creativity" (p.108). These stages were developed by applying the developmental theories of Freud, Erikson, and Piaget to the concept of creativity. That may be the reason why the developmental stages appear to reflect more of a psychosocial or psychological developmental cycle rather than a creative developmental cycle. The stages that Lesner and Hillman (1983) suggested were:

1. From birth to 11 years old - "creative internal enrichment." The child "...learns basic life skills and develops his or her own distinctive personality" (p.108);
2. From 12 to 60 years old - "creative external enrichment." This stage is marked by "...a very gradual transition that reflects that underlying concurrent transition from the self-centered orientation seen in the first stage to a more outward, socially aware, multi-focused orientation which develops gradually as one matures" (p.109);
3. From 60 to death - "creative self-evaluation." This stage features "... a return to a narcissistic orientation that focuses on creative self-evaluation; it entails a process of assessment and taking stock of one's life in preparation for eventual death" (p.110). These three stages appear to be distinct, yet very broad (stage 1-11 years ; stage 2-49 years; stage 3-undeterminable number of years). Lesner and Hillman recognize that creative interest is present throughout the entire human life-span. Examining creativity

across the life-span provides one developmental schema for exploring creativity.

One of the forerunners of the study of creativity across the life-span was Schaie (1977) who proposed a decrement model of the course of creative ability over the life cycle. He suggested that the maximum level of creative capacity was reached sometime during adulthood (approximately 40 years of age), followed by a subsequent, irreversible decline in succeeding years. There have been several studies to support this theory (Alpaugh & Birren, 1977; Alpaugh, Parham, Cole, & Birren, 1982; Alpaugh, Renner, & Birren, 1976; Lehman, 1953, 1956; Simonton, 1975, 1984). For instance, after 20 years of research, Lehman (1953) concluded that creativity declines with age. However, in contrast, recent research has been conducted which refutes the decrement theory (Butler, 1967, 1973; Cohen, 1986; Cohen-Shalev, 1989; Hendricks, 1987; Kogan, 1973; Mumford, 1984; Pruyser, 1987; Romaniuk & Romaniuk, 1981; and Smith & Kragh, 1975). For example, Jaquish and Ripple (1981) found that while elderly adults (61-84 years old) were generally less fluent and flexible than younger adults (18-60 years old) age did not differentiate the ability to be original.

Schaie's age decrement model is not an age-related creativity curve at all, but rather an age-related career curve. Only a modest amount of attention has been paid to creativity across the life-span as a whole for those who are not in "creative" professions. For example, in 1921, Lewis Terman selected 40 females for his study of intellectually gifted California school children. Due to their age, Terman's subjects could not have been chosen on the basis of their career choice. These individuals were interviewed intermittently from 1921 to 1987 regarding their creative accomplishments. Vaillant and Vaillant (1990) reported that the women's capacity for creativity (putting something new

in the world that was not there before) was assessed by a recorder who examined their creative ability according to the following criteria: statewide recognition for a creative product, community recognition for creativity, creative personal hobbies, or sustained creativity of any kind. The results indicated that 20 of the 40 women were perceived as creative, usually for literary publication, art, music, or starting an organization. This study indicates that creative output is not necessarily a function of career age or professional age but, perhaps, that creative output is related to development.

Schaie's decrement model of creativity, often cited in psychological literature (e.g., Cohen-Shalev, 1989; Kogan, 1987; Schaie & Willis, 1986; Simonton, 1990) reflects a cynical view for those over 40 years of age. In contrast to Schaie's view, several researchers believe that older adults are and can be creative. For instance, Lindauer (1992) stated that scholars in the humanities argue that old age is a time when a variety of positive changes in creativity can occur. Butler (1974), for example, believed that there were varying degrees of creativity in older adults. He suggests that one could develop creative abilities throughout life. For instance, one can go from little or no creative ability to some ability with age.

Another theorist who discusses creativity from a life-span approach is Taylor (1974). His view of creativity is similar to Butler's (1974) in the sense that different creative abilities are maximized at different points in the life cycle. He lists five times during which creative potential occurs: in the earliest years of life, during the formal years of educational training, during the middle and late 20s, during the late 20s through the late 30s, and during the late 50s and 60s. Taylor completely disregards the suggestion that creative ability may be maximized in the elderly (i.e., those over 60). He also suggested

that the motivations for creativity vary with the particular stage in which an individual is currently involved. It is apparent that Taylor recognizes that creative ability is present in later life (50s and 60s). Consensus has by no means been reached within creativity across the life-span perspective, but some agreement has been reached on several issues. For instance, Simonton (1988) indicated that the positive associations among aptitude, longevity, and production rate have been agreed upon by many theorists.

Creativity and the Older Adult

Creativity in maturity and old age was studied by Smith and Kragh (1975). They discovered that the creative processes in adults differs from the creative processes in adolescents and children. Their study indicated that although creativity was present in older adults, it was not expressed in the same manner by adolescents or children. This difference in creative expression may be one reason why the life-span theorists conclude that creativity declines in the later years. An explanation may be that these theorists were researching creative behaviors that are commonly expressed by children or adolescents, but not so commonly expressed by older adults.

One explanation of Schaie's (1977) and other life-span theorists' findings concerning the decline in creativity in older adults may be due to the measurement of creative ability for this population. Adult creativity, historically, has been measured with instruments designed for children and young adults. If life-span theorists are concluding that creativity is not apparent in older adults, why has it been suggested (e.g., Dohr & Forbess, 1986; Romaniuk, 1978) that older adults themselves do not necessarily perceive a decline in creative capacity with age? Perhaps researchers are not examining creativity with older adults appropriately.

Creativity or Conformity

One issue that must be contemplated in a discussion of the creativity of older adults is that of conformity. In general, creativity has been seen as contributing original ideas, different points of view, and new ways of looking at problems and conformity has been seen as doing what is expected or not disturbing others. Klien and Birren (1973) found that older adults had a tendency toward conformity rather than creativity. Older adults in the late 20th century were reared during times when conformity was rewarded and creativity may have been punished. For instance, in the past, those who conformed received less social pressure than did those who did not conform or expressed their individuality. As a result of upbringing, older adults today may not appear as creative on formal measures due to the instilled social pressure to conform. Additionally, since values and mores differ across cultures, one's background may impact their creative expression.

Factors That Engender a Decline in Older Adults' Creativity

The literature indicates that there are certain factors that may be related to the decline of creativity in the later years. Some of these factors are physical illness (Simonton, 1977), the slowing down of information processing (Alpaugh & Birren, 1977), and a decrease in the self-esteem among the elderly (Jaquish & Ripple, 1981). There are some indications that older people take longer to learn new things (Botwinick, 1967), are more cautious (Canestrari, 1963), are hesitant to take risks (Botwinick, 1973), need more structure to feel comfortable (Klein, 1972), and need help in raising their level of self-perceived competence (Klein & Birren, 1973). All of these indications suggest that older people are not fundamentally less creative than younger persons but that there are factors that may interfere with older adults' creative ability. Clark and Osgood (1985)

have noted that older adults have many qualities necessary for creativity, such as a wealth of experience, knowledge, skills, wisdom, and time.

In 1953, after 20 years of research on creativity across the life-span, Lehman concluded that creativity declines with age. In 1956, Lehman tried to clear up some of the misconceptions concerning his previous findings. He pointed out that it is not age itself but the factors that accompany age that bring about a reduction in creativity. Lehman included 16 factors in his 1956 study which account for the decrement of creativity in older adults. A few of the factors he suggested are: a decline in physical vigor, preoccupation with the practical demands of life, serious illness, lack of education, and a decline in sensory capacity or motor precision. Despite Lehman's 1953 findings other researchers (e.g., Dennis, 1966; Niederland, 1973; Roe, 1972; Simonton, 1975; Torrance, 1977) have looked for other possible reasons for a decline in creativity in older adults. For instance, Niederland (1973) noted some possible reasons for the decline in creativity may be disturbances in body image or the trauma of loss.

Assessment of Creativity

There may be no psychological construct that has proven to be so difficult to measure as that of creativity and specifically, the creative process. The definitional problems with creativity contribute to the difficulty of measuring the construct. The primary concern in creativity assessment research has been lack of clarity regarding the purposes or goals of creativity assessment. It has been suggested by Crockenberg (1972), Khatena (1977), Rimm (1984), Torrance (1976, 1979b), and Treffinger (1980) that the purpose of assessing creativity should extend well beyond the effort to label or isolate highly creative people from their less creative peers. Treffinger (1987) states several

reasons for measuring creativity. A few of these examples are:

1. to advance research progress in understanding the nature, development, and nurture of creative behavior;
2. to help remove the concept of creativity from the realm of mystery and superstition; and
3. to obtain data, such as pre-or post-test data, for group comparisons for research, program evaluation, or assessment of change or growth as a function of instruction or experimental conditions.

The previous reasons serve as rationale for assessing divergent thinking in this study. This study adds to the literature base of creativity in general and more specifically, to the divergent thinking or creative process of older adults.

Use of Older Adults as Research Subjects

The present study utilized groups of older adults in order to inspect the relationship between stage resolution according to Eriksonian theory and divergent production. One consideration when using older adults as research subjects is that of ensuring cooperation for participating in research. Aiken (1980) noted that the elderly are frequently reluctant to be evaluated because they see research as trivial or fear doing badly and appearing foolish. Kuhlen (1964, per Whitbourne, 1976) has alleged that unwillingness among the elderly to be assessed stems from avoidance of stress. Whitbourne (1976) reported that older adults have higher test anxiety than younger adults which may make them reluctant to participate in research.

Testing older adults can prove to be challenging, not only for this study but for all research. Some of the challenges that may affect testing are loss of physical, cognitive, and sensory abilities that accompany aging. Kuriansky, Gurland, and Cowan (1976) have

noted that the elderly frequently have physical problems like poor vision, hearing difficulty, arthritis, and are quick to fatigue, as well as communication problems, which make them difficult to test. Aiken (1980) has corroborated these observations, and added that the aged also frequently have cognitive limitations, such as distractibility and memory loss, which impair information processing. In addition, he has noted that their slower motor speed and reactions result in timed tests (i.e., TTCT-FFA) being inherently biased against them. In short, one must be cognizant of these challenges when assessing this population and make all possible accommodations such as this study attempted to do.

In addition, older individuals are subject to group pressures and social influence, which has been demonstrated by Kahana and Coe (1969). Klein (1972), found that in a conformity situation older adults conformed significantly more often than younger individuals. The subjects in this study were administered the TTCT-FFA and the MPD in groups. As a result, some may have felt group pressures during administration which could have resulted in socially desirable responses.

CHAPTER III

METHOD

Introduction

This chapter details the procedures employed for collecting data relevant to the purpose of the study presented in Chapter I. Included in this chapter is: (1) a description of the participants; (2) a discussion of the instrumentation used, including various psychometric properties; (3) an outline of the procedures; and (4) a description of the data analyses conducted for each research question.

Participants

The full sample in this study consisted of 127 older adults. However, twenty participants provided incomplete data and were excluded from the study. As a result, the final sample included 107 subjects, both female ($N=76$) and male ($N=31$). The participants ranged in age from 50 to over 85. The sample was predominately Caucasian. Twenty-three of the participants were from California and 74 were from Oklahoma. The subjects chosen for participation in this study were those who were living independently or did not require physical assistance from others for daily tasks. More specific descriptive characteristics of the participants appear in Chapter IV, along with issues concerning the generalizability of the subject sample to the accessible population and the size of the sample.

Instrumentation

The instruments used to collect data were a demographic information questionnaire developed by the researcher (see Appendix A), the Measures of Psychosocial Development (MPD), and the Torrance Tests of Creative Thinking: Figural Form A (TTCT-FFA).

Demographic Information Questionnaire

Sample characteristics were assessed with an instrument developed by the researcher. This instrument consisted of seven items. Including items measuring participant age, gender, and ethnic background. Additional items were included to obtain data for use beyond the current study.

Measures of Psychosocial Development

The Measures of Psychosocial Development (MPD) (Hawley, 1988) were designed to assess Erikson's stages of development as discussed in Chapter II and presented in Table 2. There are 112 items on this self-report instrument. The items are statements rated along a five-point Likert scale. For example, one statement is "the younger generation is going to the dogs". The options on the Likert scale are as follows: "very much like me" (four points), "like me" (three points), "somewhat like me" (two points), "not much like me" (one point), and "not at all like me" (zero points). Respondents are instructed to chose the option which best represents their opinion on each statement. The 112 MPD items assessed 16 scales (i.e., eight positive and eight negative). Each of the positive and negative scales contain seven items. The individual scales measured by the MPD are listed in Table 3. As noted in Table 3, the positive scales are labeled P1 through P8, the negative scales are labeled N1 through N8, and the derived

resolution scales are labeled R1 through R8. There is also a derived total positive scale which includes the eight positive scales, a derived total negative scale which includes the

Table 3

Scales Measured by the MPD

Positive Scales	Negative Scales	Resolution Scales
(P1) Trust	(N1) Mistrust	(R1) Trust vs. Mistrust
(P2) Autonomy	(N2) Shame & Doubt	(R2) Autonomy vs. Shame & Doubt
(P3) Initiative	(N3) Guilt	(R3) Initiative vs. Guilt
(P4) Industry	(N4) Inferiority	(R4) Industry vs. Inferiority
(P5) Identity	(N5) Identity Confusion	(R5) Identity vs. Confusion
(P6) Intimacy	(N6) Isolation	(R6) Intimacy vs. Isolation
(P7) Generativity	(N7) Stagnation	(R7) Generativity vs. Stagnation
(P8) Ego Integrity	(N8) Despair	(R8) Ego Integrity vs. Despair
(TP) Total Positive	(TN) Total Negative	(TR) Total Resolution

Note. Adapted from Measures of Psychosocial Development: Professional Manual (Hawley, 1988).

eight negative scales, and a derived total resolution scale which includes the eight resolution scales.

Scoring of the MPD

Scoring of the MPD required several tasks. First, the number of raw points for each of the 112 items was determined. For each item, the number of possible raw points ranged from zero to four depending on the option the participant chose on the five-point Likert scale. The number of raw points associated with each option on the Likert scale were as follows: "very much like me" (four points), "like me" (three points), "somewhat like me" (two points), "not much like me" (one point), and "not at all like me" (zero points). Second, the raw points were entered into a personal computer. Third, the 27 scale scores (i.e., eight positive, eight negative, eight resolution, total positive, total negative, and total resolution) were computed using SPSS[®] for Windows (Norusis, 1993).

The eight positive and eight negative scale scores (see Table 7) were calculated as a sum of the number of raw points associated with the seven items used to measure each of the 16 scales (eight positive and eight negative). For example, P1(Trust) was scored by summing the number of raw points for items 1, 17, 33, 49, 65, 81, and 97 and N1(Mistrust) was the sum of points for items 9, 25, 41, 57, 73, 89, and 105. The total positive score was computed as the sum of P1, P2, P3, P4, P5, P6, P7, and P8 and the total negative score was the sum of N1, N2, N3, N4, N5, N6, N7, and N8. After the positive and negative scales were computed, the stage resolution scale scores were derived. The resolution scale scores were derived by subtracting each negative scale score from its respective positive scale score (e.g., P1-N1 or P6-N6). Finally, the total resolution score was obtained by summing the stage resolution scale scores (i.e., $R1 + R2 + R3 + R4 + R5 + R6 + R7 + R8$).

The resolution scale scores (R1 through R8) resulted in a negative value if the respondent had not resolved that particular stage. Likewise, the total resolution score resulted in a negative value if the respondent had not resolved a majority of the stages. For this study, the eight resolution scale scores were used as measures of psychosocial development.

Missing Data. With any self-report questionnaire, scoring issues such as missing data warrant discussion. Following Hawley's (1988) recommendation, if more than two items for any of the eight positive and eight negative scales were missing for any participant, or more than 10 items for the entire test were missing, that individual's data were discarded. In the current study, 13 MPD protocols did not meet this recommendation and were thus, discarded.

For those protocols with missing data that were not discarded, an average item rating was generated, as suggested by Hawley (1988). For example, consider a participant with one missing score on one of the 16 scales. The raw points for the completed items on the scale were added and then divided by the number of completed items. This resulting value was substituted for the missing data. The average item ratings replaced the missing data for no more than two items on any scale. There were ten protocols that required generating average item ratings for some scales. As a result, when the MPD data were analyzed there were no "truly" missing data, or blanks.

Reliability of the MPD

Internal Consistency Reliability. Internal consistency reliability is estimated by determining how all items on a test relate to all other items and to the total test (Gay, 1987). With a theory-based instrument, such as the MPD, internal consistency reliability is of importance because the items on the scales should be somewhat intercorrelated. If the items are intercorrelated, they function well together and are likely to measure the construct that is intended to be measured (e.g., Erikson's theory). If the items are moderately or highly intercorrelated then they may measure a similar trait. For internal consistency, a high intercorrelation among items is desirable.

One method of estimating internal consistency is via Cronbach's coefficient alpha (Cronbach, 1951). Coefficient alpha is a lower bound of the proportion of variance in test scores explained by common factors underlying item performance (Crocker & Algina, 1986). Coefficient alpha (α) was computed by Hawley (1988) in her reliability study. She obtained a sample of 372 adolescents and adults (213 females and 159 males; age range 10-93; mean=26), and obtained α for the eight positive scales (a range of .75 to .85)

and for the eight negative scales (a range of .69 to .83). It should be noted that two coefficients from the Hawley study were relatively low-Trust (.65) from the positive scale and Guilt (.69) from the negative scale.

Alpha coefficients similar to those reported by Hawley (1988) were reported by Swank, Gaa, Harrington, Jennings, and Longano (1991). In this reliability study, an analysis of over 1,500 MPD scores of primarily female subjects, aged 18 to 77 years, yielded the following α ranges: from .67 to .82 (positive scale), from .67 to .82 (negative scales), and from .78 to .87 (resolution scales). Again, two of the α coefficients (Trust .60; Guilt .65) were relatively low.

Internal consistency reliability was assessed in the current study by generating coefficient α . The α values obtained with the sample of older adults are presented in Table 4. The α coefficients ranged from .53 to .82 for the positive scales, and from .61 to .76 for the negative scales. The α coefficients for the resolution scales ranged from .64 to .80. Of the positive scales, four (Trust, .66; Autonomy, .53; Intimacy .68; and Ego Integrity .67) failed to reach Hawley's (1988) recommended .70. Of the negative scales, again four (Shame & Doubt .69; Guilt .62; Inferiority .61; and Stagnation .67) were below .70. And, of the resolution scales, the α coefficient (.64) for R2-Autonomy vs. Shame and Doubt was below .70. For this study, the relatively low α s on the positive and negative scales, but larger α s on the resolution scales may be due to the number of items on the scales. Each positive and negative scale are made up of seven items whereas the resolution scales are made up of 14 items (seven for each positive and negative scale). Coefficient α for the composite or entire instrument was .95. An α of .95 can be

Table 4

Alpha Coefficients for the 24 MPD Scales

Positive Scales	α	Negative Scales	α	Resolution Scales	α
P1-Trust	.66	N1-Mistrust	.74	R1	.76
P2-Autonomy	.53	N2-Shame & Doubt	.69	R2	.64
P3-Initiative	.73	N3-Guilt	.62	R3	.70
P4-Industry	.82	N4-Inferiority	.61	R4	.76
P5-Identity	.73	N5-Identity Confusion	.76	R5	.81
P6-Intimacy	.68	N6-Isolation	.71	R6	.76
P7-Generativity	.72	N7-Stagnation	.67	R7	.74
P8-Ego Integrity	.67	N8-Despair	.76	R8	.80

Note. R1=Trust vs. Mistrust, R2=Autonomy vs. Shame & Doubt, R3=Initiative vs. Guilt, R4=Industry vs. Inferiority, R5=Identity vs. Identity Confusion, R6=Intimacy vs. Isolation, R7=Generativity vs. Stagnation, R8=Ego Integrity vs. Despair.

interpreted as at least 95% of the total score variance in the MPD was due to true score variance. Ninety-six percent accounts for a large portion of variance in entire instrument. It must be noted that this large composite α coefficient does not indicate unidimensionality or support a single underlying factor. The .95 is only a lower bound of the proportion of variance in the test scores which is explained by common factors underlying item performance. Overall, the MPD scales were reported to have acceptable levels of internal consistency by Hawley (1988) and Swank et al. (1991). In the current study, several of the reliability indices were slightly lower than the targeted .70 value. Besides, Anastasi (1982) has indicated that coefficient α provides a conservative estimate of internal consistency reliability. At any rate, given the exploratory nature of this study combined with the .95 composite reliability, internal consistency was deemed adequate for this study.

Validity of the MPD

Content Validity. Content validity refers to the degree to which a test measures an intended content area (Gay, 1987). With a theoretically-based instrument, such as the MPD, content validity is of utmost importance. The instrument must demonstrate that it is measuring the intended content area (e.g. Eriksonian theory) and not some other area. The development of the MPD was based on Erikson's fixed-stage theory of psychosocial development. Individual items were selected by Hawley (1988) in her review of Erikson's major works. Once an initial pool of 225 items were selected from the review, they were sent to five judges who were deemed experts on Eriksonian theory. Indices of agreement between the items on each scale and the judges' classifications were then calculated. The percentage of times the judges matched an item keyed to the item designations provided a measure of content validity for the MPD. That is, if the items were matched appropriately by the judges, then they were believed to be measuring Erikson's theory. Hawley indicated that at least seven items were to be included for each scale so that the content domains of Erikson's theory would be accurately represented. Ninety-four (83.9%) of the 112 MPD items were agreed upon by the majority of judges. Thirteen items (11.6%) were selected from those agreed upon by less than the majority of judges in order to adequately cover the content domains as defined by Erikson's theory. Five items (4.5%) from the initial pool, for which there was no consensus, were rewritten and added to the final item pool to provide an equal number of items for each of the 16 scales. The indices of agreement by the judges provided support for the content validity of the measure.

Construct Validity. Construct validity is the degree to which a test measures an intended hypothetical construct, or nonobservable trait. (Gay, 1987). The construct

measured by the MPD is Erikson's psychosocial development. Given that the MPD is a psychological personality measure, construct validity is a very important characteristic it must possess.

One method of assessing construct validity is through factor analysis. Longfellow (1989) examined the construct validity of the MPD via exploratory factor analysis. His analysis was conducted for each of the 16 scales using the 1988 normative sample. Longfellow found two consistent factors which he labeled "Disintegration/Demoralization" and "Wholeness/ Wholesomeness". He stated that these two factors were supportive of the two dynamically opposed personality forces proposed by Erikson. Another factor analytic study of the MPD (Swank et al., 1991) found support for the unidimensionality of the 112 item measure. In other words, the MPD may consist of a higher order factor, which is reflective of the epigenetic principle. Overall, these two factor analytic studies appeared to provide support for the construct validity of the MPD.

Another method for assessing construct validity is multitrait-multimethod analysis. Both convergent and discriminant validity (e.g., construct validity) may be estimated with this analysis. Convergent validity is established when different instruments are able to measure a similar trait. Discriminant validity is established when instruments discriminate between different traits. Therefore, one way in which an instrument may possess construct validity is for that instrument to exhibit high correlations with different measures of the same trait (convergent validity) and low correlations when the same instrument measures different traits (discriminant validity).

Hawley (1988) used the multitrait-multimethod technique to assess the construct

validity of the MPD. Her analysis allowed for a systematic examination of the convergent and discriminant validity of the positive and negative scales. She employed the MPD, the Inventory of Psychosocial Development (IPD) (Constantinople, 1966), and the Self-Description Questionnaire (SDQ) (Boyd, 1966) as multiple instruments to assess Eriksonian theory. The multiple traits included the eight negative and positive scales. The results of the analysis supported both the convergent and discriminant validity, which in turn supported the construct validity.

In summary, the construct validity of the MPD was supported by both factor analytic and multitrait-multimethod studies. Therefore, the MPD appeared to be a valid measure of Erikson's fixed-stage personality theory of psychosocial development.

Use of MPD with Older Adults

The norm group used by Hawley (1988) to establish reliability and validity included older adults. Her norm group consisted of a large sample of 2480 individuals aged 13 to 86. In further analyzing the norm group data, Roid and Ledbetter (1987) found large response differences between males and females. As a result, separate norms were developed for these two gender groups. Evidently, the MPD may be appropriate for use with older adults, although gender differences should be taken into consideration.

Although the MPD is a relatively new measure, it is currently being used in research with older adults. The MPD has been utilized with older adults in two doctoral dissertations (Euler, 1990; Schmidt, 1991). For example, Euler (1990) explored various types of psychological adjustment among the elderly. He used the MPD to assess Eriksonian well-being. The results of his study showed that pragmatic and Eriksonian well-being had only a moderate correlation which led him to state that "gerontologists

should cease using superficial indices like life satisfaction, and implement more substantial psychological tests" (p.202) when assessing the elderly.

Researchers reviewing the MPD have indicated that it is useful with older adults. For instance, Gable (1992) suggested that the MPD was adequate in meeting the challenge of measuring affective variables associated with the personality development of older adults. Carmer (1992) supported the epigenetic principle. He indicated that the conflicts characterizing each of Erikson's developmental stages are present at all times, regardless of one's age. This statement would seem to support examination of the stages collectively, rather than individually, particularly with older adults.

Torrance Tests of Creative Thinking

The Torrance Tests of Creative Thinking (TTCT) (Torrance, 1990) is often used for research purposes. Treffinger (1985) has noted that in the complex and still evolving domain of creativity assessment, the TTCT can be recommended as a battery of tests useful in research. Additionally, Chase (1985) reported that the TTCT was an instrument best used for research and experimentation, which was Torrance's original intention for the tests.

The TTCT were created as part of a long-term research program that emphasized classroom experiences that stimulate creativity. Developed within an educational milieu, scores are based on factors originally observed (i.e., fluency, flexibility, originality, and elaboration) observed by Guilford. The TTCT was published in 1966 after nine years of work by Torrance and his colleagues on the nature of creative behavior and its assessment. Thus, over time, the TTCT has changed. For instance, a revision of the TTCT was published in 1974, and in 1984 a streamlined scoring was made available (Torrance &

Ball, 1984). The TTCT is a battery which consists of two tests (i.e., verbal and figural) each with two forms (A and B).

TTCT Figural Test

In this study, the figural test of the TTCT was used to assess the creative process (e.g., divergent thinking) of older adults. The figural test is comprised of three picture-based scales: picture construction (one item), picture completion (10 items), and parallel lines (30 items). Each of the three scales consists of pre-printed stimuli. For instance, the stimulus in the picture construction activity is a solid black shape that resembles a teardrop or jelly bean. The respondents are told to

...think of a picture or an object which you can draw with this shape as a part. . . . when you have completed your picture, think up a name or title for it and write it at the bottom of the page in the space provided" (Torrance, Ball, & Safter, 1992, p.2).

For the picture completion activity the stimulus material consists of ten incomplete figures.

In this activity the respondents are told to

... add lines to the incomplete figures ...so you can sketch some interesting objects or pictures... (and).. try to make it tell as complete and as interesting a story as you can by adding to and building up your first idea. Make up an interesting title for each of your drawings, and write it at the bottom of each block. (Torrance, Ball, & Safter, 1992, p.2)

The stimulus for the parallel lines activity consists of thirty sets of parallel lines. In this activity the respondents are told to

... see how many objects or pictures you can make from the pairs of straight lines below and on the next two pages. The pairs of straight lines should be the main part of whatever you make. . . Make as many different pictures or objects as you can and put as many ideas as you can in each one. Make them tell as complete and as interesting a story as you can. Add names or titles in the spaces provided.

(Torrance, Ball, & Safter, 1992, p.3)

Administration time for each activity is 10 minutes which results in an overall administration time of 30 minutes. These activities can be administered to groups or to individuals. It should be pointed out that although the number of items for each of the three activities greatly varies, from one to 30, the time limit of 10 minutes for each activity suggests equality among the activities. That is, the scoring of the activities takes into consideration the number of items in each activity.

The three activities (i.e., picture construction, picture completion, and parallel lines) that make up the figural test are multiple-task paper-and-pencil measures of five aspects of divergent thinking: fluency, originality, elaboration, abstractness of titles, and resistance to premature closure. Each activity in the figural test does not measure all five aspects, per se. For instance, picture construction measures originality, abstractness of titles, and elaboration. Picture completion measures all five, and parallel lines measures fluency, originality, and elaboration.

The figural test was available in two forms, A and B. The only difference between the forms are the stimuli used in each activity to elicit responses. For instance, form A has an activity called parallel lines which requires the examinee to make objects or pictures out of several pairs of parallel lines. Form B has a similar activity but it employs circles

instead of pairs of parallel lines. All things being equal, form A of the figural test was chosen for use in this study as determined by the flip of a coin.

The figural test only, as opposed to the verbal test or both, was chosen for use in this study for four primary reasons. First, it is recommended that both the verbal and figural tests be administered in two different sittings approximately 30 minutes apart (Torrance, 1990). If the entire battery (e.g, verbal and figural) were administered, data collection would take over two hours. This might contribute to fatigue among the older adult participants, and attrition in the study.

Second, as Sylcox (1983) noted, the verbal test requires written (sentence) answers which may be difficult for many older adults due to potential limited manual dexterity. The responses required for the figural activities do not require as precise dexterity as the verbal activities. Therefore, the figural test was used to ensure the comfort of the participants.

Third, Sylcox (1983) maintained that the time limits for the written answers required by the verbal test would prohibit older adults from answering the questions to the best of their ability. Although the figural test is timed as well, she indicated that the drawing activities would not require as much time for the older adults to complete.

Finally, the researcher spoke to researchers in creativity (Dr. Diane Montgomery, personal communication, March 9, 1993) and gerontology (Dr. Kathy Goff, personal communication, March 9, 1993) who agreed that the figural test, which requires drawing only, was the most advantageous to use with older adults. Based upon the four previously mentioned reasons, the figural test was employed as a measure of divergent thinking of older adults in this research.

Issues Related to Scoring the TTCT: Figural Form

The original 1966 procedure for scoring the figural test was replaced by a streamlined scoring procedure in 1984 (Torrance, 1990) based on specific criteria established from previous research. Torrance (1990) took original protocols from a 22-year predictive validity study which had been scored with the original scoring method and rescored them using the streamlined method. He then reported a positive correlation between scoring methods for the criterion-referenced indicators and the creativity index for adult creativity (Torrance, 1990). More support for the streamlined method of scoring was demonstrated by Gray (1986). She found that the scoring categories of the streamlined scoring system assessed the essential qualities of creativity (see Torrance, 1979a) to a far greater extent than the use of creative process measures alone. Based on research, the streamlined scoring of the three picture based figural activities yields 13 criterion-referenced measures and five norm-referenced measures which are discussed next, along with the specific scoring procedures used in this study.

Criterion-Referenced Measures. There are 13 criterion-referenced measures incorporated in the figural test. The 13 criterion-referenced measures each play a role in real life creativity and each can be involved and improved with practice (Torrance, Ball, & Safter, 1992). The criterion-referenced measures are described below. The basic descriptions were adapted from Torrance, Ball, and Safter's (1992) definitions in the Torrance Tests of Creative Thinking: Streamlined Scoring Guide Figural A and B. Refer to this guide for pictorial examples of items in each category.

1. Emotional Expressiveness (in drawings, titles)- feelings and emotions may be communicated through titles and the drawings themselves in each of the three activities.

2. Storytelling Articulatness (context, environment)- Not only must detail or elaboration be present in a drawing, some kind of environment must be created for the object, although an object can tell an articulate story if there are figural and/or verbal indicators of the objects history (story).

3. Movement or Action- this scale is based on theories of projective psychology, specifically the Rorschach theory and Torrance's (1992) observations.

4. Expressiveness of Titles- a title must go beyond simple description. It must communicate a feeling, emotion, or other synthesis and communicate something about the picture that the graphic cues themselves do not communicate without the title.

5. Synthesis of Incomplete Figures (combination of two or more)- this shows an ability to see relationships among rather diverse and otherwise unrelated elements.

6. Synthesis of Lines (combination of two or more sets)- the creative person sees possibilities that others assume have been closed, and under restrictive conditions, is able to use whatever freedom is allowed.

7. Unusual Visualization (above, below, at angle, etc)- the tendency to present ideas or objects in unusual visual perspective seems to be an especially important indicator of creative personality. For instance, this is when the test taker draws a picture from a different perspective.

8. Internal Visualization (inside, cross section, etc.)- According to Torrance (1992), there are many indications that creative people are better able than others to visualize beyond exteriors and pay attention to the internal, dynamic workings of things. Pictures that reflect internal visualization usually include detail about the contents of objects such as a garbage can or a pregnant woman.

9. Extending or Breaking Boundaries- the creative solution of many problems involves redefinition, getting out of the rut of unsuccessful solutions of the past, and extending or breaking the boundaries of the problem as currently defined. Examples of this would be making parallel lines into bodies or trees.

10. Humor (in titles, captions, drawings, etc.)- humor is creative because it involves unusual combinations and surprise. Titles, captions, and drawings are scored as humorous if they have the quality of portraying something comical, funny, or amusing.

11. Richness of Imagery (variety, vividness, strength, etc.)- responses are scored for richness of imagery when they show variety, vividness, liveliness, and intensity. An example of this would be making parallel lines into an elevator chute, a stack of dimes turned sideways or a bathtub.

12. Colorfulness of Imagery (excitingness, earthiness, etc.)- this is defined as exciting in its appeal to the senses of taste, touch, smell, feel, sight, etc.; other descriptives might be flavor, earthiness, unreal, spooky, emotionally appealing, fantastic, etc.

13. Fantasy (figures in myths, fables, fairy tales, science fiction, etc.)- fantasy provides an almost inexhaustible supply of analogies that are useful in stating and solving problems creatively. This is scored if the drawing depicts fairy tales, fables, or fantasy childhood experiences.

When scoring the criterion-referenced measures, scorers review each test protocol for evidence of special creative strengths. A rating of "+" is given for some evidence of a strength (usually one or two occurrences), a rating of "++" is given for repeated evidence of a strength (usually three or more occurrences), and a rating of "blank" is given in the absence of a strength (Torrance, 1991). The ratings on the creative strengths are

generated for each of the 13 measures.

Norm-Referenced Measures. Upon development of the streamlined scoring procedure, Ball and Torrance (1980) decided that Guilford's flexibility factor could best be assessed via measures of abstractness of titles and resistance to premature closure. As a result, the norm-referenced measures included in the TTCT: Figural Forms include: fluency, originality, elaboration, abstractness of titles, and resistance to premature closure. A general description and the scoring procedure for each of the five norm-referenced measures is next.

1. **Fluency.** Fluency represents the test taker's ability to provide a large number of figural images (Torrance et al., 1992). The more fluent an individual is, the more aware s/he is of alternative explanations, consequences and solutions. A fluent thinker generates more than the traditional "yes/no/maybe" or "right/wrong" solutions to problems and dilemmas -- a tendency to do more than expected (Torrance, 1987). The activities that the fluency score is comprised of are picture completion and parallel lines. Obtaining the streamlined fluency score is done by simply counting the number of ideas a person expresses through interpretable responses that use the stimulus in a meaningful manner.

2. **Originality.** Originality is the ability to provide uncommon or unique responses that require creative strength. Originality denotes breaking the norm or coming up with less obvious responses. Original thinking involves the production of new, unconventional, or unique ideas and/or products, such as inventions, patents, and innovative solutions. The activities that the originality score is comprised of are picture construction, picture completion, and parallel lines. Originality is scored by comparing responses to specific criteria. Then the most common responses are assigned a zero and all other responses that

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show creative strength as assigned a one (Torrance et al., 1992).

3. **Elaboration.** Elaboration is the test taker's ability to develop, embroider, embellish, or carry out ideas (Torrance et al., 1992). The activities that the elaboration score is comprised of are picture construction, picture completion, and parallel lines. According to Torrance, Ball, and Safer (1992), there are two assumptions that underlie the scoring of elaboration. The first is that the minimum and primary response to this stimulus figure is a single response. For instance, the scorer must determine if the minimum detail has been given in order for a drawing to be what the title reflects. The second assumption is that the imagination and exposition of detail is a function of creative ability. Elaboration is streamlined scored by having the scorer estimate the number of details within six sets of limits determined by normative data. To explain, credit is given for each appropriate detail added to the original stimulus figure, its boundaries, and/or its surrounding space. Overall, the elaboration score is the sum of the scores for all three activities.

4. **Abstractness of Titles.** Abstractness of titles is based on the idea that creativity requires one to perceive the essence of a problem. This perception of essence is reflected in the level of abstraction given to the title of the pictures drawn (Torrance et al., 1992). Abstractness of titles is scored with the picture construction and picture completion activities. The titles given to the drawings in these activities are evaluated on a scale ranging from 0 to 3 according to criteria described in Torrance Tests of Creative Thinking: Streamline Scoring Guide Figural A and B (Torrance et al., 1992). For instance, each point can be considered as a different stage in the abstracting process or in capturing the essence of the picture.

5. Resistance to Premature Closure. Resistance to premature closure is based on the generally accepted conclusion that creative behavior requires a person to "keep open" in processing information and to consider a wide variety of information (Torrance et al., 1992, p.14). Resistance to premature closure is scored for picture completion activity only. Each response in the picture completion activity is given a score of zero, one, or two depending on the amount of resistance to premature closure which is determined by criteria stated in the manual. For instance, a score of zero is given when the figure is closed by one of the quickest, easiest, most direct routes with a straight line, simple curved line, solid shading, or coloring. Letters of the alphabet and numerals are also scored zero. The maximum score is 20 and can be attained only when all ten figures are used.

Scoring of the TTCT-FFA

For this study, the TTCT-FFA protocols were scored by experts employed by Scholastic Testing Services (STS). These experts used the streamlined scoring method previously discussed and presented in the Torrance Tests of Creative Thinking: Streamlined Scoring Guide Figural A and B. (Torrance, Ball, & Safter, 1992). Specifically, raw scores were calculated for all five norm-referenced measures and for the 13 criterion-referenced indicators of creative strengths based on the previously mentioned criteria. The five norm-referenced raw scores and the sum of the 13 criterion-referenced indicators of creative strengths were used as measures of divergent thinking.

Reliability of the TTCT: Figural Form

Internal Consistency. Measures of internal consistency such as split-half or coefficient α generally assume that the performance on one part of a test should not differ

greatly from performance on other parts. Internal consistency measures further assume that the test score reflects a unidimensional trait or behavior.

Treffinger and Poggio (1972) noted that it is not appropriate to assess reliability via internal consistency with instruments which yield open-ended responses. The TTCT-FFA is such a measure. The TTCT-FFA is comprised of open-ended items which represent a range of distinctly different abilities and performances. Performance throughout the test varies greatly and the test scores reflect multidimensional traits rather than a unidimensional trait. Thus, the discussion of reliability for the TTCT-FFA is limited to the following issues.

Equivalent Forms/Test-Retest. Equivalence, or alternate forms, refers to comparing two forms of the same instrument determine across-measure consistency. The TTCT figural test is available in two forms (form A and B). In reviewing the equivalent forms reliability, Treffinger (1985) reported reliability coefficients ranging from .50 to .93 for the two figural test forms. Additionally, two studies of counterbalanced design to assess alternate forms reliability were cited for the original scoring (Torrance, 1974b). One study, which had two weeks between testing sessions, obtained alternate forms coefficients of .71 to .85 for the figural scores. The other study had an eight-month time interval between testing sessions and an experimental creative writing treatment for half of the subjects. Alternate forms reliability in the counterbalanced design with a longer time interval yielded equivalency of forms reliability of .60 to .80 for the figural tests, with one of the coefficients, fluency ($r = .50$) not being adequate reliability level for research purposes. Evidence of alternate forms or test-retest reliability was not presented in the manual for the streamlined version (Torrance & Ball, 1984). However, either figural form

of the TTCT is adequate for research (Treffinger, 1985) and for use with groups (Swartz & Cooper, 1990).

Scoring Reliability. Reliability of the scoring procedure is important due to the subjective nature of the task. In other words, different individuals could allocate different points to the same protocol. Therefore, interrater reliability has been empirically examined. For example, in a study with a random sample of 50, Torrance (1990) reported interrater reliability coefficients for the criterion-referenced measures ranging from .60 (emotional expressiveness) to 1.00 (expressiveness of titles, synthesis of figures, and synthesis of lines). In the same study, the range of scoring reliability coefficients for the norm-referenced measures was from .95 (elaboration) to .99 (fluency and originality). Based on this study, Torrance reported that it is possible to keep the interrater reliability of the norm-referenced and the criterion-referenced measures above the .90 level. The results of Torrance's study revealed that there should be a relatively small discrepancy between scores, regardless of the scorer.

Validity of the TTCT: Figural Forms

Content Validity. Content validity is concerned with determining the extent to which a set of test tasks provides a relevant and representative sample of the task domain (Gronlund & Linn, 1990). The notion of incorporating several tasks in the TTCT-FFA was based on Torrance's (1974) definition of creativity as a complex behavior rather than a pervasive unitary function. The activities in the figural test were selected to sample different creative thinking abilities. The activities of the TTCT-FFA reflect the significant sort of creative thinking essential in daily life and creative breakthroughs (Torrance, 1990).

Overall, Torrance (1990) believes that his experience and research in the field of creativity allows him to conclude that the TTCT: Figural Forms do have appropriate content validity. He has indicated that the activities sampled do represent the possible universe of creative behaviors, and thus this instrument exhibits content validity.

Construct Validity. Construct validity is concerned with the process of determining the extent to which test performance can be interpreted in terms of one or more psychological constructs (Gronlund & Linn, 1990). Torrance (1974) presented intercorrelations among the scales of the TTCT: Figural Forms as evidence of the construct validity of the measure. The intercorrelations between the different measures incorporated in the TTCT: Figural Forms tend to be low, which suggests that different creativity constructs are being measured. In addition, Torrance reported on correlational studies which report a relationship between composite scores and an evaluation of originality of imaginative stories. For instance, in order to establish construct validity with the streamlined scoring method, Torrance (1981) administered TTCT-FFA; Adaption-Innovation Inventory; Style of Learning and Thinking, Form A; What Kind of Person Are You?; Something About Myself; Schaefer's Similes Test; Stein's Physiognomic Cue Test; Guilford's Possible Jobs and Seeing Problems; Torrance's Creative Motivation Scale; and the Rorschach Inkblots to 33 graduate students enrolled in his creative thinking course. He concluded that the figural forms were significantly related to the Adaption-Innovation Inventory ($r=.36$), Creative Motivation Scale ($r=.41$), Rorschach Movement ($r=.36$), Rorschach Originality ($r=.45$), Style of Learning & Thinking Form A ($r=.61$), and What Kind of Person are You? ($r=.50$). He indicated that these moderately strong correlations suggest adequate construct validity for the figural forms of the TTCT.

Use of the TTCT-FFA with Older Adults

The TTCT-FFA was not specifically developed for use with older adults. However, in the Norms-Technical Manual: Figural (Streamlined) Forms A & B (Torrance, 1990, p.3) it was stated that ". . . the figural activities can be administered at all educational levels from kindergarten to . . . the elderly. It . . . provides sufficient challenge to be useful with older adults". Apparently, the TTCT tests have the potential to be useful indicators of fluency, originality, and elaboration of thinking for virtually any age group (Torrance, 1974).

The TTCT figural test has had limited use in research focusing on older adults. For example, Sylcox (1983) used the TTCT figural test with subjects aged 62 to 88 to assess the creativity of nursing home residents. Engelman (1981) used this measure with women aged 60 to 82 in a creative problem-solving program. By employing the TTCT-FFA in the current study, further information concerning use of this instrument with older adults was provided.

Procedures

The next section outlines the data collection procedures followed in this study. Also discussed are the scoring procedures of the two instruments. Specific procedural issues relating to the scoring of the instruments is presented here.

Data Collection

There were several recruitment strategies used to solicit participants for this study. First, posters and sign-up sheets requesting participation in the study were placed at various locations such as grocery stores, beauty salons, nutrition centers, and senior centers throughout towns and cities that were accessible to the researcher. Both small and

large Midwestern and Western towns and cities were targeted. Potential participants were directed to leave their names and phone numbers on the sign-up sheets in order for the researcher to contact them at a later date to arrange a time for participation. In a second strategy, advertisements were placed in local newspapers requesting participation on specific dates. Additionally, some local newspapers printed articles concerning the research project and requesting volunteers. In the advertisements and articles, participants were asked to call the researcher and sign-up for a data collection date. Third, to assist in the recruitment of participants, a directory of local community services was used to locate organizations that cater to adults 50 and over. Once the organizations were identified, a contact person was called. The contact person would invite participants to the data collection site on specific days. Finally, the primary researcher attended functions, such as community meetings and nutrition center programs, to recruit participants. Once participants were contacted, a "snowball" type method was used, in that individuals who indicated interest in participating were asked to contact friends and relatives who might be interested in participating as well. With all four recruitment strategies, the potential participants were informed that a free meal was offered the day they chose to participate in the study.

On each day of data collection, the subjects arrived at the specified location, were seated, and were then served the free meal. Once the meal was completed, group administration of instruments began. Two sheets were placed in folders handed out to each participant. Participants were asked to fill out the Institutional Review Board (IRB) consent form (Appendix A) and the demographic information questionnaire (Appendix B). Next, all three activities from the TTCT-FFA were administered by the researcher to the

collective group which took approximately 30 minutes. Individuals were instructed to place the completed TTCT-FFAs into their folders. A fifteen minute break was then provided. Once the fifteen minutes of free time was up, all participants were administered the MPD. Since some older adults might have experienced difficulty reading the MPD, large print copies were provided to all participants. There was no time limit set for completion of the MPD. Once the older adults completed the MPD they were asked to put this instrument into their folder, and to return the folder to the primary researcher. A completed folder contained the IRB consent form, personal information questionnaire, TTCT-FFA, and MPD instruments. At this point, the subjects either left the research site or stayed and socialized with others.

One final note, the TTCT-FFA and MPD were not given in counterbalanced order. There were several reasons for this decision. The constructs of creativity and psychosocial development do not appear prone to practice effects. Also, since the participants were given a break between administration of the TTCT-FFA and the MPD, they may have had a tendency to discuss the instruments, and that discussion could have potentially contaminated the results. For example, if half of the subjects were administered the TTCT-FFA before the break, then during the break those individuals discussed possible solutions to the drawings with those who had not taken the TTCT-FFA, the data provided might have been biased. Another reason for not administering the instruments in counterbalanced order is that the TTCT-FFA is timed, whereas the MPD is not. This method allowed everyone to break at the same time and to leave at their convenience as soon as the MPD was completed.

The entire data collection took thirteen months. Prior to data collection, certain

steps were taken to organize the sessions. Arrangements were made for a meeting place and for the incentive to participants. During each session a free meal was provided or catered for the participants. There were two research assistants at some of the meetings. These assistants aided in distribution of printed materials, served coffee, seated subjects, and provided other general assistance. These assistants did not administer the instruments in any manner. Administration of the instruments was done solely by the primary researcher. The same procedure was followed during each data collection session. On two occasions, after the data collection sessions, articles appeared in local newspapers discussing the success of the sessions.

Data Analyses

The following is a discussion of the data analyses performed to address each research question. Initially, descriptive statistics such as frequencies, means, and standard deviations were generated for the background data (age, gender, and ethnic background) obtained through the demographic information questionnaire. The research questions specific to this study are presented next and the analyses are discussed.

Research Question One

The issue in research question one was to determine whether the MPD total resolution score (TR) or stage resolution scale scores (R1 through R8) yielded results consistent with Erikson's epigenetic principle. Because the stages are theoretically hierarchically related, it was hypothesized that the composite score (TR) would be a more accurate description of older adults' psychosocial development than the stage specific resolution scores. In conjunction with the epigenetic principle, it was assumed that the overall psychosocial development of older adults should take into consideration all eight

stages, collectively, instead of various stages. Additionally, correlational analyses were conducted to explore the relationship among the eight stage resolution scale scores, and between the stage resolution scores and the TR score.

Research Question Two

Is there a relationship between the divergent thinking of older adults and stage resolution according to Eriksonian theory? In order to explore this second research question, correlation coefficients between the divergent thinking variables (i.e, fluency, originality, elaboration, abstractness of titles, resistance to premature closure, and the sum of the 13 criterion-referenced indicators of creative strengths) and the eight stage resolution scale scores (R1 through R8) were generated.

Research Question Three

The third research question addressed gender pattern differences in the relationship between the divergent thinking of older adults and stage resolution according to Eriksonian theory. Correlation coefficients between the six divergent thinking variables and the eight stage resolution scale scores separately for both females and male. The difference between the correlation coefficients for males and females were then tested for statistical significance with t-tests.

CHAPTER IV

RESULTS OF THE STUDY

Introduction

Presented in this chapter are sampling issues along with the results of the statistical analyses conducted for the three research questions.

Sampling Issues

One sampling issue is the representativeness of the sample. It must be determined if the sample selected for use in a study was selected from its population. As with any research endeavor, if a sample is well selected, research results based on the sample will be generalizable to the population. The population that the researcher realistically selects from is referred to as the accessible, or available population. For this study, the accessible population consisted of both male and female Americans from various ethnic background who were 50 and older. The sample selected for use in this study consisted of 107 older adults [female ($N=76$) and male ($N=31$)] from various backgrounds. In order to demonstrate the similarity between the accessible population and the sample regarding age, gender, and ethnicity, tables were constructed. The age, gender, and ethnic backgrounds of the sample and population are presented in Tables 5, 6, and 7 respectively.

Table 5 presents the frequencies and percentages of age categories for both sample

Table 5

Representativeness of the Sample Regarding Age

	Sample Data (N=107)		National Data (N=64,403)	
	Frequency	Percent of Total N	Frequency	Percent of Total N
Age				
50-55	9	8.4	13,775	21.2
56-60	7	6.5	10,418	16.0
61-65	11	10.3	10,531	16.2
66-70	22	20.6	9,852	15.2
71-75	22	20.6	7,761	12.0
76-80	16	15.0	5,843	9.0
81-85	12	11.2	3,705	5.6
Over 85	5	4.7	3,160	4.8
Missing	3	2.8	0	0

Note. National data percentages were calculated from data in U.S. Bureau of the Census, Statistical Abstract of the United States: 1993 (113th edition.) Washington, DC, 1993, Table 16, p. 16. National data are from 1991.

data and national data. The modal age category for the sample was 66 to 75. In the national data, the modal age category was 61 to 65. In the sample data, approximately 41% were between 66 and 75 years. Approximately 25% were between 50 and 65 while approximately 31% were 76 or older. In the national data, approximately 53% were between the ages of 50 and 65. Approximately 27% were between 66 and 75 while approximately 19% were 76 or older. Overall, in the sample, those younger than 66 were under-represented as compared to the national data by approximately 28 percent and those 66 and older were over-represented by 26 percent. In other words, the sample in this study appeared to be slightly older than the population from which it was drawn.

Table 6 consists of frequencies and percentages of gender classifications in both the sample and national data. According to Table 6, 71% of the sample were female

whereas 55.9% of the national data were female. In the sample, 29% were male while

Table 6

Representativeness of the Sample Regarding Gender

	Sample Data (N=107)		National Data (N=64,403)	
	Frequency	Percent of Total N	Frequency	Percent of Total N
Gender				
Female	76	71.0	36,024	55.9
Male	31	29.0	28,379	44.1

Note. National Data percentages were calculated from data in U.S. Bureau of the Census, Statistical Abstract of the United States: 1993 (113th edition.) Washington, DC, 1993, Table 16, p. 16. National data are from 1991.

approximately 44 percent of the national data consisted of males. When comparing the sample data to the national data, the females were over-represented by 15.1% and the males were under-represented by 15.1%. Taken together, there were more female and fewer males in the sample than in the population.

Table 7 is a listing of the frequencies and percentages of ethnic background classifications for the national data the sample represents. In this table, the largest percentage (78.5%) of participants in the sample were classified as Caucasian with the remaining 21.5% classified as either African American, Mexican American/Hispanic, or Native American/Indian. For the national data, the largest percentage (74.5%) were Caucasian while the rest (25.5%) were classified as African American, Mexican American/Hispanic, Asian/Pacific Islander, and Native American/Indian. Collectively, in the sample, African Americans and Native American/Indian were over-represented whereas Mexican Americans/Hispanics were under-represented. The Asian/Pacific

Table 7

Representativeness of the Sample Regarding Ethnicity

	Sample Data (N=107)		National Data (N=64,403)	
	Frequency	Percent of Total N	Frequency	Percent of Total N
Ethnicity				
African American	16	15.0	4,920	7.6
Asian/Pacific Islander	0	0.0	1,150	1.8
Caucasian	84	78.5	47,950	74.5
Mexican/American Hispanic	3	2.8	2,807	4.4
Native American/ Indian	1	0.9	279	0.4
Missing	3	2.8	7,298	11.3

Note. National Data percentages were calculated from data in U.S. Bureau of the Census, Statistical Abstract of the United States: 1993 (113th edition.) Washington, DC, 1993, Table 23, p. 22. National data are from 1991.

Islanders were under-represented because the sample did not contain this ethnic group.

Caucasians were well represented in the sample when compared to the national data.

Another sampling issue is the size of the sample. The sample selected must be large enough to adequately represent the population it represents. If the sample is too small, then the sample would not truly represent the population. Recall, in the current study, the total number of subjects was 107, with 76 females and 31 males. Gay (1987) and Van Dalen (1979) both noted that for correlational research an acceptable sample size is 30. The total sample, in this study, as well as the both gender groups exceeded the recommended 30 therefore, the sample should have adequately represented the accessible population. In summary, considering both the representativeness and size of the sample, the results from this study can be generalized to the accessible population.

Results of Statistical Analyses for Research Questions

Research Question One

The first research question addressed whether the MPD total resolution score, or the stage resolution scale scores of older adults yielded results in conjunction with Erikson's epigenetic principle. Two primary analyses were conducted to explore this research question.

Descriptive Analysis

Means and standard deviations were computed for the eight positive, eight negative, eight stage resolution, and the total resolution scales. All means and standard deviations are presented in Table 8. The means in this table are the average number of points for all participants on each scale. The eight positive and negative scales are made up of seven items each and points are allocated according to the response chosen on the five-point Likert scale. For each item, the points on the Likert scale ranged from zero to four. The highest score for any scale could be 28 (four points on all seven items) and the lowest could be zero (zero points on all seven items). The means for the positive and negative scales, reported in Table 8, are the average number of points earned by all participants on each scale. The means for the positive scales ranged from 18.83 (P7-Generativity) to 21.09 (P1-Trust). The largest mean on the negative scales was on N6-solation (10.16) and the smallest mean was on N8-Despair (5.49). On the positive side, the participants' collective opinions were that they felt more of a sense of Trust, Identity, Ego Integrity, Industry, Autonomy, Intimacy, Generativity, and Initiative, respectively. On the negative side, they felt more of a sense of

Table 8

Means and Standard Deviations of the 24 MPD Scales and of the Total ResolutionScale (N=107)

Scale	Mean	Standard Deviation
Positive Scales		
P1-Trust	21.09	3.50
P2-Autonomy	19.70	3.51
P3-Initiative	17.25	4.40
P4-Industry	20.79	4.37
P5-Identity	20.83	4.00
P6-Intimacy	19.44	3.73
P7-Generativity	18.83	4.43
P8-Ego Integrity	20.80	3.93
Negative Scales		
N1-Mistrust	6.79	4.45
N2-Shame & Doubt	9.07	4.29
N3-Guilt	9.91	3.91
N4-Inferiority	7.64	3.99
N5-Identity Confusion	6.90	4.72
N6-Isolation	10.14	4.58
N7-Stagnation	6.63	4.13
N8-Despair	5.49	4.37
Stage Resolution Scales		
R1-Trust vs. Mistrust	14.30	6.55
R2-Autonomy vs. Shame & Doubt	10.63	5.96
R3-Initiative vs. Guilt	7.35	6.40
R4-Industry vs. Inferiority	13.15	6.69
R5-Identity vs. Identity Confusion	13.93	7.43
R6-Intimacy vs. Isolation	9.30	6.86
R7-Generativity vs. Stagnation	12.21	6.84
R8-Ego Integrity vs. Despair	15.32	7.13
Total Resolution	96.18	43.43

Isolation, Guilt, Shame & Doubt, Inferiority, Identity Confusion, Mistrust, Stagnation, and Despair, respectively.

The mean item response on each scale can be revealed if the means are divided by seven (the number of items on each scale). For instance, on P1-Trust the mean item

response (i.e., $21.09/7=3.01$) was between "like me" and "very much like me". And on P3-Initiative the mean item (2.46) response was between "somewhat like me" and "like me". On the negative scale with the highest mean (N6-Isolation, mean=10.14) the mean response (1.15) was between "not much like me" and "somewhat like me". And the negative scale with the lowest mean (N8-Despair, mean=5.49) the mean item response chosen most often (.78) was between "not at all like me" and "not much like me".

Of the stage resolution scales, the highest mean (15.32) was at R8-Ego Integrity vs. Despair while the lowest mean (7.35) was at R3-Initiative vs. Guilt. Overall, the participants reported they were struggling more with the issues present at the eighth stage (i.e., Ego Integrity vs. Despair) and less with the issues present at the third stage (i.e., Initiative vs. Guilt). The mean for the Total Resolution scale could range from -224 to +224 (-28 on all resolution scales to + 28 on all resolution scales). Therefore, a positive mean, such as the 96.18 reported in Table 8, indicated that overall resolution was successful or healthy to some degree. A negative mean would have indicated an overall unsuccessful resolution. So, overall, the participants in this study appeared to have successfully resolved, to some degree, the collective eight stages.

The standard deviations reported in Table 8 show how much the respondents' scores deviated from their respective means, or how closely the scores clustered around the mean. For instance, the standard deviations ranged from 3.50 to 4.40 on the positive scales and from 3.91 to 4.72 on the negative scales. The spread of scores was somewhat similar on P1-Trust (SD=3.50) and P2-Autonomy (SD=3.51); and on P4-Industry (SD=4.37) and P3-Initiative (SD=4.40). Further, there was some commonality among the responses on N3-Guilt (SD=3.91) and N4-Inferiority (SD=3.99). The standard deviations

for the stage resolution scales ranged from 5.96 (R2-Autonomy vs. Shame & Doubt) to 7.43 (R5-Identity vs. Identity Confusion). In other words, there was more variability in the responses on R5 than there on R2. For the TR scale, a standard deviation of 43.43 might be considered relatively large when compared to the positive, negative, and stage resolution scale standard deviations. This larger standard deviation occurred because the TR standard deviation was based on responses from all 112 items whereas the other scales were based on responses from 14 items (seven from each the positive and negative scale). Regardless of the size of the standard deviation in comparison to the other scales, on the TR scale, there was limited variability between the responses on the collective scales.

Correlational Analyses

The second analysis conducted for research question one was a correlational analysis. This was carried out to determine if there was a relationship between the eight stage resolution scales and the total resolution scale. The resulting Pearson product-moment correlation coefficients (r) are presented in Table 9. Also presented in Table 9 are the r^2 values which represent the overlap or shared variance between the two variables. Correlation coefficients are interpreted based on magnitude and direction. For instance, the correlation between R1-Trust vs. Mistrust and R2-Autonomy vs. Shame and Doubt was .55. For an exploratory study, a correlation of .55 can be interpreted as a moderately strong positive relationship (Bartz, 1988). The r^2 value between R1 and R2 was .30. A r^2 of .30 means that approximately 30% of the variance between R1 and R2 is shared. Furthermore, $1-r^2$ equals the amount of variance that is not shared. The amount of variance that is not shared R1 and R2 was .70 or 70%. Overall, the relationship between R1 and R2 is statistically significant at the .001 level and 30% of the variance

Table 9

Correlation Coefficients Between the Eight Stage Resolution Scales and the Total Resolution Scale for All Participants

	R1	R2	R3	R4	R5	R6	R7	R8	TR
		r(r ²)	r(r ²)	r(r ²)	r(r ²)	r(r ²)	r(r ²)	r(r ²)	r(r ²)
R1	-	.55(.30)***	.36(.13)***	.57(.32)***	.68(.46)***	.64(.40)***	.63(.39)***	.79(.62)***	.81(.65)***
R2		-	.57(.32)***	.62(.38)***	.76(.57)***	.50(.25)***	.49(.24)***	.57(.32)***	.78(.60)***
R3			-	.63(.39)***	.50(.25)***	.44(.19)***	.57(.32)***	.46(.21)***	.70(.49)***
R4				-	.66(.43)***	.47(.22)***	.72(.51)***	.61(.37)***	.82(.67)***
R5					-	.56(.31)***	.61(.37)***	.73(.53)***	.86(.73)***
R6						-	.56(.31)***	.60(.36)***	.75(.56)***
R7							-	.71(.50)***	.83(.68)***
R8								-	.86(.73)***
TR									-

Note. R1=Trust vs. Mistrust, R2=Autonomy vs. Shame & Doubt, R3=Initiative vs. Guilt, R4=Industry vs. Inferiority, R5=Identity vs. Identity Confusion, R6=Intimacy vs. Isolation, R7=Generativity vs. Stagnation, R8=Ego Integrity vs. Despair; TR=Total Resolution; N=107; ***p<.001.

between them is shared while 70% of the variance is not shared. The remaining coefficients in Table 9 can be interpreted similarly. It must be noted that all the coefficients listed in Table 9 reached statistical significance at the .001 level. The correlations among the stage resolution scales ranged from .36 (R1 with R3) to .79 (R1 with R8). The largest correlation coefficient ($r=.79$) was between R1- Trust vs. Mistrust and R8-Ego Integrity vs. Despair. Thus, these two scales share the most variance ($r^2=.62$). Overall, the relationship among all the stage resolution scales were statistically significant with the exception of R3 and R6.

For the Total Resolution scale, the bivariate coefficients ranged from .70 (R3-Initiative vs. Guilt) to .86 (R5-Identity vs. Identity Confusion and R8-Ego Integrity vs. Despair). The relationships between the eight stage resolution scales with the TR scale were statistically significant and were strong positive values. R6 and R8 has the most in common or shared the most variance (73%) with the TR scale while R3 shared the least (49%) variance. Overall, all correlations yielded relatively strong statistically significant coefficients.

Research Question Two

The second research question addressed whether there was a relationship between stage resolution according to Eriksonian theory and divergent production in older adults. In order to answer this research question, the eight stage resolution scale scores were correlated with the six divergent thinking variables (fluency, originality, elaboration, abstractness of titles, resistance to premature closure, and the criterion-referenced indicators). Prior to presenting the correlation coefficients, the means and standard deviations of the divergent thinking variable set and the eight stage resolution scales are

presented in Table 10.

Descriptive Analysis

Listed in Table 10 are the means and standard deviations of the divergent thinking variables for all participants. Of the norm-referenced measures, the largest mean and

Table 10

Means and Standard Deviations of the Divergent Thinking Variables for all

Participants (N=107)

Divergent Thinking Variable	Mean	Standard Deviation
Norm-Reference Measures		
Fluency	17.13	6.88
Originality	10.80	4.69
Elaboration	4.97	1.46
Abstractness of Titles	6.25	3.87
Resistance to Premature Closure	11.63	4.46
Criterion-Referenced Measure		
Criterion-Referenced Indicators	5.50	2.62

standard deviation was for fluency (mean=17.13; SD=6.88) whereas the smallest mean and standard deviation was for elaboration (mean=4.95; SD=1.46). Again, of the norm-referenced measures, the subjects collectively performed their best on the tasks that measured fluency, originality, and resistance to premature closure. The participants performed less well on the tasks measuring elaboration and abstractness of titles.

Moreover, as shown in Table 10, the mean of the 13 criterion-referenced measures was 5.50 with a standard deviation of 2.62. For criterion-referenced measures each of the 13 creative strengths were given a "+", "++", or "blank" depending on the number of occurrences. The highest possible score on any protocol could be 26 (i.e, "++" for each item) and the lowest possible score could be zero (i.e, "blank" for each item). A mean of

5.50 indicates that the average number of occurrences for the 13 criterion-references measures was between five and six. The standard deviation of 2.62 is relatively small which means that there was not much variability among responses. In other words, the scores clustered fairly closely around the mean.

Correlational Analyses

Table 11 consists of correlation coefficients between the six divergent thinking variables and eight stage resolution scale scores for all participants. The r^2 values are also presented for the coefficients that were statistically significant. There were nine

Table 11

Correlation Coefficients Between the Divergent Thinking Variables and the Eight Stage Resolution Scales for all Participants (N=107)

	FLU $r(r^2)$	ORIG $r(r^2)$	ELAB $r(r^2)$	TITLE $r(r^2)$	CLOSE $r(r^2)$	CRITE $r(r^2)$
R1	.02	-.04	-.01	-.07	.07	-.04
R2	.24(.05)*	.15	.12	.03	.14	.14
R3	.22(.04)*	.19(.03)*	.05	.10	.16	.15
R4	.35(.11)**	.27(.07)*	.14	.21(.04)*	.33(.10)**	.15
R5	.25(.05)*	.15	-.01	.02	.13	.07
R6	-.00	-.08	-.08	-.11	.03	-.01
R7	.21(.04)*	.14	.13	.10	.16	.06
R8	.18	.11	.07	-.08	.12	.02

Note. FLU=fluency, ORIG=originality, ELAB=elaboration, TITLE=abstractness of titles, CLOSE=resistance to premature closure, CRITE=Criterion-referenced indicators, R1=Trust vs. Mistrust, R2=Autonomy vs. Shame & Doubt, R3=Initiative vs. Guilt, R4=Industry vs. Inferiority, R5=Identity vs. Identity Confusion, R6=Intimacy vs. Isolation, R7=Generativity vs. Stagnation, R8=Ego Integrity vs. Despair; * $p < .05$, ** $p < .001$.

statistically significant coefficients. All nine statistically significant relationships were in the positive direction with shared variance ranging from 3% to 11%. Five of the nine significant coefficients involved the fluency measure stages R2($r = .24$), R3($r = .22$), R4

($r=.35$), R5($r=.25$), and R7($r=.21$). Two significant indices were on the originality measure at R3($r=.19$), and R4($r=.27$). Additionally, abstractness of titles ($r=.21$) and resistance to premature closure ($r=.33$) were significantly correlated with R4-Industry vs. Inferiority.

Assessed individually, the coefficients for fluency ranged from $-.00$ (R6) to $.35$ (R4); originality ranged from $-.04$ (R1) to $.27$ (R4); elaboration ranged from $-.01$ (R1 and R5) to $.14$ (R4); abstractness of titles ranged from $.03$ (R2) to $.21$ (R4); resistance to premature closure ranged from $.03$ (R6) to $.33$ (R4); and the criterion-referenced indicators ranged from $-.01$ (R6) to $.15$ (R3 and R4). Overall, all the stages except R1, R6, and R8 were significantly correlated with a divergent thinking variable. All the divergent thinking variables were significant correlated with a stage resolution except elaboration and the criterion-referenced indicators.

Research Question Three

Research question three addressed whether there were gender pattern differences in the relationship between stage resolution and divergent thinking in older adults. First, the means, standard deviations, and t-values of the divergent thinking variable set and the eight stage resolution scales for both males and females are presented in Table 12 and discussed. Then, the relationship between the divergent thinking variables and the eight stage resolution scales for both males and females are presented in Table 13.

Descriptive Analysis

Table 12 provides a listing of the means and standard deviations for the divergent thinking variables and the eight stage resolution scale scores for both female and male. Of the divergent thinking variables, the means ranged from 4.96 (elaboration) to 17.09

(fluency). The largest mean for both genders (female mean=17.09; male mean=17.22) was on the fluency measure. The smallest mean for both genders was on elaboration (female mean=4.96; male mean=5.00).

Of the stage resolution scales, the means ranged from 7.01 (R3-Initiative vs. Guilt)

Table 12

Means and Standard Deviations of the Divergent Thinking Variables and the Eight Stage Resolution Scales by Gender

Variable	Females Mean(SD)	Males Mean(SD)	t-value
Divergent Thinking Variables			
Fluency	17.09(6.80)	17.22(7.18)	-.09
Originality	10.82(4.56)	10.77(5.07)	.05
Elaboration	4.96(1.46)	5.00(1.50)	-.13
Abstractness of Titles	6.16(4.00)	6.48(3.58)	-.39
Resistance to Premature Closure	11.92(4.17)	10.93(5.11)	1.04
Criterion-Referenced Indicators	5.54(2.74)	5.42(2.35)	.21
Stage Resolution Scales			
R1-Trust vs. Mistrust	14.54(6.24)	13.71(7.34)	.55
R2-Autonomy vs. Shame & Doubt	10.26(5.70)	11.52(6.57)	-.93
R3-Initiative vs. Guilt	7.01(6.06)	8.16(7.20)	-.78
R4-Industry vs. Inferiority	13.01(6.65)	13.35(6.89)	-.20
R5-Identity vs. Identity Confusion	14.09(7.15)	13.55(8.20)	.32
R6-Intimacy vs. Isolation	9.74(6.51)	8.23(7.65)	.97
R7-Generativity vs. Stagnation	12.68(6.81)	11.03(6.86)	1.13
R8-Ego Integrity vs. Despair	15.33(7.00)	15.29(7.54)	.02

Note. Female $N=76$, Male $N=31$. SD= standard deviation.

to 15.33 (R8-Ego Integrity vs. Despair). The largest mean was at R8 (female mean =15.33; male mean=15.29) for both genders. And, both female (mean=7.01) and male (mean=8.16) means were the smallest at R3.

Tests of Significance

T-tests were conducted to determine if there were significant differences between

the female and male means of the divergent thinking variables and the stage resolution scales. The resulting t-values are reported in Table 12. According to the t-values for the divergent thinking variable set, there was not a large enough discrepancy to be considered a "real" or statistically significant difference between the female and male means. Also, there was not a statistically significant difference between female and male means on the stage resolution scales.

Correlational Analyses

The second statistical analysis conducted was a correlational analysis examining the relationship between the divergent thinking variable set and the eight stage resolution scales for both genders. The resulting coefficients from this analysis are shown in Table 13. Also presented in Table 13 are the r^2 values for the statistically significant coefficients.

For females, the statistically significant coefficients reported in Table 13 were fluency ($r=.31$) and originality ($r=.30$) at R3-Initiative vs. Guilt; fluency ($r=.35$), originality ($r=.25$), and resistance to premature closure ($r=.28$) at R4-Industry vs. Inferiority; and fluency ($r=.25$) and elaboration ($r=.28$) at R7-Generativity vs. Stagnation. There were no significant relationships across the eight stages for females between abstractness of titles and the criterion-referenced indicators. All the significant relationships were in the positive direction.

The largest amount of shared variance was at R4-Industry vs. Inferiority with fluency ($r^2=.11$). The smallest amount of shared variance accounted was 5% (originality at R4-Industry vs. Inferiority). Across the eight stages, fluency was related to three of the stages (R3-Initiative vs. Guilt, R4-Industry vs. Inferiority, and R7-Generativity vs. Stagnation); originality to two (R3-Initiative vs. Guilt and R4-Industry vs. Inferiority);

Table 13

Correlation Coefficients Between the Divergent Thinking Variables and the Eight Stage Resolution Scales by Gender

	FLU		ORIG		ELAB		TITLE		CLOSE		CRITE	
	Female r(r ²)	Male r(r ²)	Female r(r ²)	Male r(r ²)	Female r(r ²)	Male r(r ²)	Female r(r ²)	Male r(r ²)	Female r(r ²)	Male r(r ²)	Female r(r ²)	Male r(r ²)
R1	.01	.05	-.06	-.02	.05	-.13	-.05	-.12	.05	.10	-.11	.13
R2	.17	.39(.15)*	.10	.25	.11	.13	-.00	.09	.11	.23	.14	.14
R3	.31(.09)**	.05	.30(.09)**	-.02	.18	-.22	.15	-.03	.22	.09	.21	-.00
R4	.35(.11)**	.35	.25(.05)*	.33	.15	.10	.21	.21	.28(.07)*	.44(.18)*	.14	.18
R5	.17	.40(.16)*	.09	.26	-.01	-.01	.01	.04	.09	.20	.04	.16
R6	.14	-.30	.11	-.43(.18)*	.01	-.26	-.09	-.13	.14	-.17	-.00	-.03
R7	.25(.06)*	.11	.19	.04	.28(.07)*	-.24	.17	-.06	.13	.20	.07	.02
R8	.19	.15	.13	.06	.12	-.03	-.08	-.07	.12	.11	-.05	.19

Note. FLU=fluency, ORIG=originality, ELAB=elaboration, TITLE=abstractness of titles, CLOSE=resistance to premature closure, and CRITE=Criterion-referenced indicators; R1=Trust vs. Mistrust, R2=Autonomy vs. Shame & Doubt, R3=Initiative vs. Guilt, R4=Industry vs. Inferiority, R5=Identity vs. Identity Confusion, R6=Intimacy vs. Isolation, R7=Generativity vs. Stagnation, R8=Ego Integrity vs. Despair; Female N=76, Male N=31; *p<.05, **p<.01.

elaboration to one (R7-Generativity vs. Stagnation); and resistance to premature closure to one (R4-Industry vs. Inferiority). For males, there were significant relationships between fluency and R2-Autonomy vs. Shame and Doubt ($r=.39$); resistance to premature closure and R4-Industry vs. Inferiority ($r=.44$); fluency and R5-Identity vs. Identity Confusion ($r=.40$); and originality and R6-Intimacy vs. Isolation. The amount of shared variance for ranged from 15% to 18%. Eighteen percent of the variance was accounted for between originality at R6 and between resistance to premature closure at R4. All of the bivariate correlations were in the positive direction for males except originality at R6 ($r=-.43$). This $-.43$ indicates that as scores on the originality measure increased scores on R6 decreased and visa versa. This was the only statistically significant coefficient for both genders that was negative. There were no significant relationships across the eight stages for males between elaboration, abstractness of titles, and the criterion-referenced indicators.

Overall, for both genders, there were no statistically significant relationships across the eight stages at abstractness of titles and the criterion-referenced indicators. Also, there were no significant relationships across the divergent thinking variable set at R1 and R8.

CHAPTER V

DISCUSSION

Introduction

The main impetus of this study was to determine if there was a relationship between stage resolution according to Eriksonian theory and divergent production in older male and female adults. However, before this relationship could be examined, the application of Erikson's stage theory to older adults needed to be established. As a result, the first research question regarding whether the MPD total resolution or stage resolution scales yielded results in conjunction with Erikson's epigenetic principle was formulated and inspected. Then, the relationship between psychosocial development and divergent production was examined. This chapter entails a discussion of the results reported in Chapter IV along with basic limitations and recommendations for future research.

Measurement of Eriksonian Theory

Erikson (1963) recommends that psychosocial development be studied with the consideration of all the stages in mind (i.e., epigenetic principle), so that it can be determined what a future stage can be and what a preparatory stage must have been. This recommendation by Erikson should be considered for all, regardless of age. In the introduction to this study, the case was made for use of the MPD to assess psychosocial development of older adults. Following Erikson's words of encouragement, an issue at

hand for this study was: Should psychosocial development of older adults be assessed by a total resolution scale or by the eight individual resolution scales? Both methods would allow for assessment of the epigenetic principle, but examination at the stage level would provide thicker description of development. The epigenetic principle assumes two fundamental relationships exist among the scales: (1) the stages are hierarchically related; and (2) the stages are more closely related to adjacent stages than to nonadjacent stages. In order to theoretically rationalize the use of a total resolution score, these two assumptions must be met otherwise, psychosocial development should be examined at the stage level.

The first assumption of the relationship among the stages is that resolution of earlier stages affects the resolution of subsequent ones. Stated another way, there is a hierarchical relationship among stages. The stage resolution scale means were examined with regard to this assumption. Based upon the hierarchical nature of the stages, the means should increase as the stages increase. The pattern of stage resolution means appears to fluctuate more than it consistently increases. For example, after R1 the means decrease until R4 and R5, when they increase, then they decrease again at R6, and finally, they increase at R7 and R8. The lowest mean (7.35) was at R3-Initiative vs. Guilt and the highest (mean=15.32) was at R8-Ego Integrity vs. Despair. In order to meet the hierarchical assumption, there should be more of a sequentially increasing pattern across the means. Additionally, the correlation coefficients on the total resolution scale follow about the same pattern as the means for the stage resolution scales. Therefore, the first assumption of the relationship among the stages was not met to its fullest degree with the data provided by the current sample. In conclusion, based upon the current results

measurement of psychosocial development in older adults should be assessed with the eight stage resolution scales and not the total resolution score on the MPD.

Erikson (1963) stated that cultural factors can act as powerful determinants that may cause development to follow patterns inconsistent with his theory. He goes on to state that a given culture may have differential expectations as to the quality or timing of the developmental tasks they pose. The somewhat diverse ethnic background of the current sample, may be one reason that the first assumption of the epigenetic principle was not adequately met. Even though the majority (78.5%) were Caucasian, a considerable number were African American (15%). Plus, there were more Native American/Indians in the sample than in the national data. The sample selected for this study contained several participants from different cultures. Therefore, following Erikson, cultural differences may have altered the sequence of the developmental stages for these older adults.

The second assumption of the stage relationships is that the adjacent stages are more closely related than nonadjacent stages. This assumption cannot strictly be made based on the information provided in Table 9. For example, the strength of the relationship between R4-Industry vs. Inferiority and R7-Generativity vs. Stagnation was stronger than the relationship between either stage and their adjacent stages. Further, R2 was most closely related to R5-Identity vs. Identity Confusion.

However, there was some support for assumption two. For example, even though R8 is not adjacent to R1 on the epigenetic chart (see Figure 1), Erikson (1963) maintained that psychosocial development follows a cyclical-type pattern and thus, R8 is theoretically adjacent to R1. In this study, R1-Trust vs. Mistrust was highly related to R8-Ego Integrity vs. Despair. Additionally, R3-Initiative vs. Guilt was most closely related to

R4-Industry vs. Inferiority and R2-Autonomy vs. Shame & Doubt which are adjacent stages. Finally, the range of the TR variance accounted for by the individual scales appeared to represent a fairly large portion. This indicates that there was some overlap among the scales. Therefore, although some evidence was provided for the fundamentally related nature of the scales, this evidence did not appear to be strong enough to warrant use of the TR as opposed to the eight stage resolution scales.

In conclusion, since the two assumptions of the epigenetic principle were not adequately met in this study, it was decided that psychosocial development might best be examined at the stage level (stage resolution scales) rather than at an overall level (total resolution scale). Further, since the MPD is theory-based instrument, it can be justified that the assumptions of the epigenetic principle take precedence over statistical relationships. That is, regardless of the amount of overlap between the stage resolution scales and the total resolution scale, the total resolution scale should not be used because the underlying dimensions of the scale (i.e., the eight stage resolution scales) were not consistent with theory.

Psychosocial Development and Divergent Production

Once the method of assessing psychosocial development was established, the relationship between psychosocial development and divergent production could be determined. According to Guilford's (1956) SI model, divergent production consists of five mental operations, one of which is divergent thinking. According to Guilford, divergent thinking involves the following creative processes: fluency, originality, elaboration, and flexibility (measured as abstractness of titles and resistance to premature closure). These four divergent thinking facets should be related to stage resolution if there

is a relationship between the psychosocial stages and divergent production. Evidence of divergent production, according to Guilford, requires all four divergent thinking processes collective at any of the eight stages. Overall, this expectation was not met in the current study. In short, the findings revealed that there were no meaningful relationships between psychosocial development and overall divergent production for either female or male older adults.

However, there were strong relationships between some of the divergent thinking variables and specific stages of resolution. In other words, facets of divergent production did appear at some of Erikson's eight psychosocial stages. There were five stages (two, three, four, five, and seven) of psychosocial development which were significantly related to some of the divergent thinking variables. The five stage relationships are discussed next.

First, at stage two (Autonomy vs. Shame & Doubt) there was a significant positive relationship with fluency. This relationship was strong only for males, and much weaker for females. The primary conflicts associated with the second stage are obtaining a sense of independence or control over one's own life. Through the life cycle, one struggles with issues of independence. The primary independence issue for older adults is that of physical self-reliance. That is, with altering physical capacities, many older adults are well aware of the threat to their sense of personal autonomy. Through the life long search for independence, one becomes aware of alternatives and the consequences in life. According to the results presented in the current study, for males, this sense of awareness is directly related their ability to think fluently. Males may be more aware of alternatives because, in the past, they had more freedom to be independent than women did.

Second, stage three (Initiative vs. Guilt) deals with tensions associated with a search for a equilibrium between initiative and guilt. Older adults strive for a sense of initiative through activities that may be new to them. For instance, after retirement many older adults seek new hobbies. According to the data in this study, this search for initiative positively impacts older females' ability to gain a sense of overall awareness and to express their originality.

Third, at stage four (Industry vs. Inferiority) there were meaningful relationships with four (fluency, originality, abstractness of titles, and resistance to premature closure) of the divergent thinking variables. The central issue at stage four is harmony between achievement and failure. The experience one gains through developing a sense of achievement impacts the ability to think fluently, originally, and be flexible. Specifically, for females, there were definite relationships between fluency, originality, and resistance to premature closure at the fourth stage. Whereas for males, there was only a relationship with resistance to premature closure. Thus, in older womens' attempt to strive for harmony between achievement and failure, their ability to express themselves freely and openly is enhanced. In older men, striving for harmony does not have the same impact it does for older women, however it does enhance their ability to be open, to a degree.

One intriguing discovery at stage four was that for females and males combined, there was a meaningful relationship with abstractness of titles. However, when females and males were assessed separately the relationship disappeared. One reason for this finding may have been the size of the female and male samples. When the data were analyzed with regard to gender, the sample size decreased from 107 (males and females combined) to two groups of 76 (females) and 31 (males). The size of the gender groups affected the

overall relationship between abstractness of titles at stage four. Evidently, the groups individually were not large enough to produce significant results, but when the groups were combined the results yielded a strong relationship. Researchers exploring this area should note that such fluctuations in estimates may occur with different sample sizes of older adults.

Fourth, at stage five one seeks a sense of identity over identity confusion. These feelings usually dominate adolescence, however older adults feel the same tension. Older adults face the tasks of bringing identity and identity diffusion into balance by seeking to make sense of the self that has lived through many decades, that lives in the present, and that will continue to live in the indeterminate future (Erikson, 1986). The current results revealed that identity issues were positively related to older men's ability to think fluently. Thus, for men only, the search for identity appeared to enhance their awareness of alternatives in life.

Fifth, stage seven (Generativity vs. Stagnation) conflicts center around the need to care for and maintain future generations. Reconciling lifelong generativity and stagnation requires older adults to review their own years of active responsibility for nurturing the next generations. That is, older adults must find a balance between the feelings of generativity and stagnation developed in the course of middle age's active parenting, working, and creating (Erikson, 1986). In this study, the ability to think fluently and originally were related to stage seven for females only. In the past, females tended to be the primary care givers and nurturers of mankind. Throughout female development, the balance between generativity and stagnation enhanced their awareness of life as well as their ability to carry out ideas.

A startling finding was that even though, overall, there were no strong relationships between the divergent thinking variables and stage six (Intimacy vs. Isolation), this relationship was evident when males and females were separately examined. There was a strong negative relationship, for males, between originality and stage six. Thus, in the current study, older men who had obtained a high degree of resolution between intimacy and isolation were not able to produce original ideas. This finding suggests that older men may conform in order to form intimate relationships with others.

Overall, there were no differences between females and males on any of the divergent thinking measures or on the stage resolution scores. Apparently, males and females were similar in their divergent thinking processes and in the degree to which they have resolved each of the eight stages. However, some evidence for gender pattern differences was produced in the assessment of the relationships between the divergent thinking process and the eight stage resolution scales. These gender pattern differences may have been due to developmental differences. Erikson (1963) proposed a social explanation for differential development. He theorized that

childbearing forces girls to abandon much of the early locomotor vigor and the social and intellectual initiative and intrusiveness which, potentially, girls share with boys; while most boys, in pursuing the male role beyond what came naturally, had to dissimulate and to disavow what receptivity and intuitiveness they shared with girls (p. 242).

Erikson's social explanation of gender differences between psychosocial development only partially explains the differences between males and females reported here. Aritei (1976) noted that cultural awareness is essential to the creative process. Aritei's contention and

Erikson's social explanation, taken together, may explain the gender differences found in this study. Given their age, the older females in this study may not have had the social/cultural experiences the males had an opportunity to experience. This lack of experience might not only affect psychosocial development but the creative process as well.

It should be noted that stage eight (Generativity vs. Stagnation) is the age-appropriate stage for the participants in this study. However, none of the divergent thinking process were related to stage eight resolution scores. Further, there were no relationships between any of the eight stages and the criterion-referenced indicators. Torrance (1992) indicated that the 13 criterion-referenced indicators each play a role in real life creativity and the abilities involved can be improved with practice. For the present sample, if the 13 criterion-referenced indicators did play a role in real life creativity they were not related to psychosocial developmental issues. If one goal for practitioners working with older adults is to encourage creativity, practice or training in this area does not appear to be sensitive to psychosocial developmental issues.

There appears to be one central issue relevant to assessing creativity across the life-span, with regard to the relationship between psychosocial development and divergent production. Although some theorists believe creativity exists across the life-span, others do not share this belief. For example, prior research (e.g., Lesner & Hillman, 1983) has indicated that creativity does occur across the life-span. On the other hand, Taylor (1974), Butler (1974), and Dacey (1988) believe that different creative abilities are maximized at different points in the life-cycle. Additionally, Taylor (1974) reported that motivations for creativity vary with the particular stage in which an individual is currently

involved. The results in the current study generally tend to support Taylor's findings. These data suggest that different creative abilities are maximized at different points in the life-cycle. Finally, developmental issues associated with specific stages may enhance older adults' divergent production.

Basic Limitations

As with any research project, the results of this study need to be interpreted with respect to basic limitations, which are presented below.

1. The results of this investigation provided insight into relationships that existed between the stages of psychosocial development and divergent production. This relationship reported here in no way inferred causation.
2. In this study, the range of characteristics assessed (e.g., age and ethnic background) may have been restricted, thus, the correlations reported here may have been attenuated. Therefore, future researchers could expect higher correlational values.
3. Since the sample chosen was a sample of convenience, the results reported here should only be generalized to those with similar characteristics.
4. Self-report questionnaires were used in this study. Holden and Edwards (1989) cite problems pertaining to self-report questionnaires such as social desirability, response set, and the influence of education on responses. These problems may have occurred in the current study, however the well validated instruments used here should have limited such problems.
5. Paper-and-pencil instruments, such as the TTCT and the MPD may be more difficult for older adults to complete. Precautions were taken in order to avoid this limitation, however. All subjects were encouraged to do their best. They were also

informed that there were no right or wrong answers on the instruments. Also, by having large print copies available, visual or reading difficulties were deemphasized.

6. Finally, Klein and Birren (1973) report that older adults have a tendency toward conformity. The generation sampled for this study was reared during a time that conformity was rewarded. Additionally, in this study, older adults were assessed in groups, and as a result there may have been social pressure to conform. Interestingly, the older adult participants did not express concern that their peers would see their answers. They were more concerned that persons outside the testing situation would evaluate their responses. Once the participants were reassured that only the researcher would have access to their data, they appeared to feel more comfortable in completing the instruments.

Recommendations for Further Research

As a result of the current findings, there are five recommendations for future research. The first recommendation is that a larger sample from the population needs to be measured. The results obtained here may change in research studies designed with additional participants. Further, with a larger sample size and the results presented here, a causal model might be developed. More specifically, the pattern of interrelationships produced in this study could suggest a theoretical model that could be tested.

The second recommendation is to extend the operational definition of the construct of creativity. Given that the operational definition drives the choice of the assessment tool, it is suggested that the instrument selected pertain specifically to older adults.

The third recommendation is that research be conducted in an attempt to build the literature base on the creative processes across the adults life-span. More specifically, research with older adults needs to be examined across age groups, because there may be

variability between those in their 50s, 60s, 70s and 80s. This may be particularly true as life expectancy increases.

The final recommendation is that longitudinal qualitative research be conducted with older adults in order to obtain richer detail concerning the relationship between Erikson's psychosocial stages and divergent production. Additionally, in this study, there was a lack of support for measurement of the epigenetic principle. In order to demonstrate that the stages are hierarchically related, in-depth interviews or case studies could be conducted.

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APPENDICES

APPENDIX A
CONSENT FORM

CONSENT FORM

I, _____, voluntarily agree to be in the study. I understand that:

- 1) I will be asked to answer questions on paper;
- 2) I will also be asked to complete some incomplete drawings;
- 3) answering these questions will take about one hour;
- 4) my answers to the questions will help people understand how older adults feel about themselves and how creative they are;
- 5) not being in the study is completely OK, and nothing at all will happen to me if I'm not in the study;
- 6) my name will NOT appear on any of the forms;
- 7) no one except the people doing the study will see any of my answers to the questions;
- 8) I don't have to be in the study, and I can quit any time I want to;
- 9) I can call Dr. Janice Williams at (405) 744-9457 if I want to know more about the study, or I can call University Research Services, 001 Life Sciences East, Oklahoma State University, (405) 744-6983.

I have read this form and choose to be in the study. I can ask questions now about the study if I don't understand.

Date: _____

Signature: _____

APPENDIX B
DEMOGRAPHIC INFORMATION QUESTIONNAIRE

2

VITA

Stacey Lynne Thompson

Candidate for the Degree of

Doctor of Philosophy

Thesis: THE RELATIONSHIP BETWEEN PSYCHOSOCIAL DEVELOPMENT AND
DIVERGENT PRODUCTION OF OLDER ADULTS

Major Field: Applied Behavioral Studies

Biographical:

Personal Data: Born in Oklahoma City, Oklahoma, March 5, 1966, the daughter of Mary M. Leonhardi.

Education: Graduated from Putnam City North High School, Oklahoma City, Oklahoma, in May, 1984; received Bachelor of Arts degree in Psychology from Oklahoma State University, Stillwater, Oklahoma in May 1988; received Master of Science degree in School Psychometry from Oklahoma State University, May 1991; completed requirements for the Doctor of Philosophy degree with a major in Educational Research and Evaluation at Oklahoma State University in July, 1995.

Experience: Research Associate, University Assessment, Oklahoma State University, Stillwater, Oklahoma, 1995-present; Adjunct Faculty, Oklahoma State University in Oklahoma City, Oklahoma City, Oklahoma, 1994; Adjunct Faculty, Rose State Junior College, Midwest City, Oklahoma, 1994; Academic Resource Specialist, University of Central Oklahoma, Edmond, Oklahoma, 1994; American College Testing Workshop facilitator, Education Extension, Oklahoma State University, Stillwater, Oklahoma, 1992 to 1995; Doctoral Fellow, National Aeronautical and Space Administration, Educational Division, Washington D.C., 1991 to 1994; Graduate Teaching Assistant, Applied Behavioral Studies in Education, Oklahoma State University, Stillwater, Oklahoma, 1990 to 1995.

Professional Affiliations: American Assessment for Higher Education, American Educational Research Association, Mid-Western Education Research Association, Southwestern Psychological Association, International Society for Educational Planning.

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
FOR HUMAN SUBJECTS RESEARCH

Date: 06-11-93

IRB#: ED-93-094

Proposal Title: IMPACT OF PSYCHOSOCIAL DEVELOPMENT ON THE
CREATIVITY OF OLDER ADULTS

Principal Investigator(s): Janice Williams, Stacey Ross

Reviewed and Processed as: Expedited

Approval Status Recommended by Reviewer(s): Approved with
Provisions

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW
BOARD AT NEXT MEETING.
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A
CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR
BOARD APPROVAL. ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO
BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for
Deferral or Disapproval are as follows:

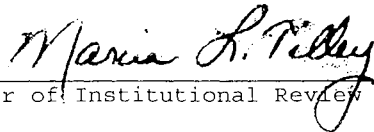
Modifications Requested:

The consent form should be a little more specific. Would it
be possible to inform the subjects that the study is about
creativity without biasing the results? The subjects should
be told they will be asked to draw/sketch some figures.

Typo: Question 98, guilt or quilt?

PLEASE SUBMIT MODIFICATIONS TO BETH MCTERNAN, 005 LSE, X45700.
DO NOT PROCEED WITH THIS STUDY PRIOR TO RECEIVING FINAL APPROVAL.

Signature:



Chair of Institutional Review Board

Date: June 11, 1993

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
FOR HUMAN SUBJECTS RESEARCH

Date: 06-16-93

IRB#: ED-93-094

Proposal Title: IMPACT OF PSYCHOSOCIAL DEVELOPMENT ON THE
CREATIVITY OF OLDER ADULTS

Principal Investigator(s): J. Williams, Stacey Ross

Reviewed and Processed as: Modifications

Approval Status Recommended by Reviewer(s): Approved

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING.
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL. ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval are as follows:

MODIFICATIONS RECEIVED AND APPROVED

Signature:

Marie L. Tilley
Chair of Institutional Review Board

Date: June 17, 1993