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Creativity, self-actualization, and androgyny: A correlational study in relation to environmental attitude and integration of self

Hutchinson, Suzanne, Ph.D.
The Ohio State University, 1994

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CREATIVITY, SELF-ACTUALIZATION, AND ANDROGYNY:
A CORRELATIONAL STUDY IN RELATION TO
ENVIRONMENTAL ATTITUDE AND INTEGRATION OF SELF

DISSertation

Presented in Partial Fulfillment of the Requirements
for the Degree Doctor of Philosophy
in the Graduate School of the Ohio State University

by

Suzanne Hutchinson, B.A., M.S.

* * * * *

The Ohio State University

1994

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College of Education
To the memory of my parents, Marjorie E. and Rolland L. Tolliver.

Be a dreamer,
but dream of today.

For life is made of dreams
and within them
we can learn
to touch
to see
to love

with all the innocence
and wonder of a child.
ACKNOWLEDGEMENTS

For a person to unfold, there needs to be an event or another person who touches the life of the one who is to grow. Where there is trust, risk, and change there also is the possibility of growth. Just as flowers cannot grow without rain and sun, without winter and spring, an individual cannot strive toward the concept of self identity without challenge and change, struggle and obstacles, kindness and caring.

As pilgrims on the journey called life, some are fortunate enough to encounter other pilgrims who are willing to help in the unfolding process. Each person, in their own way with their special abilities, touches the life of another and helps with the unfolding process. Thank you for touching and helping me to grow.

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Fields of Study

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CHAPTER I

INTRODUCTION AND NEED FOR STUDY

People's attitudes toward the environment have gained much attention throughout the past few decades. Population issues and the depletion of natural resources are usually at the forefront of environmental discussions. Many believe the solutions to our environmental problems lie in science and technology while others advocate a means to solve environmental problems by approaching the solutions holistically, looking at the total relationship of mind, body, and spirit. Technology, science and humans (comprised of mind, body, and spirit) cannot be separated, for out of the human mind, body, and spirit comes technology and science. Examples of this appear in theories such as chaos theory, quantum theory, and Gaia theory.

Many times the value messages relayed to learners go unnoticed by parents and educators alike. Whether the approach to teaching/learning about the environment is under the guise of science, environmental education, earth education, environmental psychology or environmental ethics, scholars are trying to unravel the hows and whys of human action and interaction on/with the natural world. The approaches to teaching/learning about the environment are reported in prominent journals such as Journal of Environmental Education and the Journal of Environmental Ethics. There appears to be much debate, but no answers, for understanding what influences individuals' behaviors related to the environment. Rather than looking at treatment,
as is typically the case, investigation should begin with cause; investigating the self in relation to environmental ethics.

Nash (1989) realizes the impact of environmental ethics, suggesting that the concept of environmental ethics pushes against the boundaries of traditional thought, especially the concept that nature has intrinsic value. Nash feels not only need to be concerned with environmental ethics because of its impact with traditional thought, but also because ethics is part of environmental education. Environmental education suggests humans are interrelated to the environment and do have a significant impact as part of the ecosystem and with the choice to maintain or destroy. Environmental education is not so much a discipline, as a philosophical methodology of education based on critical theory. Hargrove (1987) postulates that values may be observer or holder dependent. "We do not see the facts in the world. Rather we construct them in our heads. We see, hear, smell, taste, etc. phenomena, which we then organize in terms of our scientific paradigms" (p. 272). In approaching information concerning facts through such a filter, it is logical to assume that values are so filtered.

Differences in philosophical attitudes concerning the environment (i.e. environmental ethics) could be regarded as a predisposition related to an individuals unique state of being, for example, creativity, self-actualization, and androgyny.

The subject of environmental ethics has been approached by separating people, setting, place, education and psychological processes. A holistic view is needed in order to consider fully the human relationship to the natural world.
Environmental ethics address different philosophical attitudes toward the environment based upon the basic ethical questions of decision making. Values are brought into play resulting in problem solving, decision making, and actions which are often judged good or bad, right or wrong, just or unjust. Gray (1985) addressed the concern that solutions to environmental problems are both technical and social, but the stronger determinant of the two, the social, has been neglected.

Throughout history, humans have been fascinated in trying to explain their place in the world, their purpose, and their relation with each other. Heshusis (1991, p. 39) states "In today's construction of science, the old unity of fact and value, of observer and observed, is restored. Science is understood as an engagement of consciousness and therefore as a moral act. There is no such thing as a 'body of knowledge' outside of values, ethics, and power. Cognition is not separate from value and emotion." Combining this with the ever increasing need for research in environmental science, insights must be gained into patterns and profiles of the individual.

Some authors explore this concept a bit further and believe a relation to self (Callicott, 1985) and the spiritual aspects of humankind and subjective experience (Harman, 1988) have relation to values and humans' approach to the environment. This relation to self extends into the current debate on the intrinsic value of nature. "Since nature is the self fully extended and diffused, and the self, complementarily, is nature concentrated and focused in one of the intersections, the 'knots,' of the web of life or in the trajectory of one of the world lines in the four dimensional space-time
continuum, nature is intrinsically valuable, to the extent that the self is intrinsically valuable" (Callicott, 1985, p. 275).

The self is an integral part of human's relation to the environment and therefore to environmental ethics. In this regard, views of self in different cultures tend to produce different attitudes toward the environment. This investigation into the self is in essence an investigation into a state of being, looking at how one relates to nature through spirituality, relations with others, art, ceremonies, technology, and even time (approached as linear or cyclic time). The self has been considered an important contributor to human relations and functioning within society. A loss of sense of self and fragmentation has been related to existing problems within society (Capra, 1983; Harman, 1988; Moustakas and Perry, 1973).

From the works of psychologists such as Jung, Maslow, and Rogers the value of the self and the unconscious begins to emerge. Reviewing self-actualization (Maslow, 1970), individuation (Jung, 1964), or becoming a person (Rogers, 1961), traits begin to appear that are common to the individual involved in the fulfilment of these processes. A review of literature on creativity indicates there are connections between people who have reached these states or are moving toward them. Davis (1986, p. 2) states "Most importantly, a self-actualized person and a creative person are the same person." Self-actualization is a concept perpetuated by Maslow as part of a hierarchy of needs. As lower level needs such as the physiological needs are satisfied, higher level needs develop. At the top of the hierarchy is the need for self-actualization. Maslow (1970, p. 46) comments "even if all these needs are satisfied,
we may still often (if not always) expect that a new discontent and restlessness will soon develop, unless the individual is doing what he individually is fitted for. A musician must make music, an artist must paint, a poet must write, if he is to be ultimately at peace with himself. What a man can be, he must be. He must be true to his own nature. This need we call self-actualization."

It is from this relation of self-actualization to creativity that further investigation into creativity is necessary. Creativity is a complicated concept with many definitions and theories depending upon the context of the concept. There are traits that creative individuals exhibit. Among these traits is androgyny (Roe, 1976; Hammer, 1984).

The concept of androgyny which is understood as a blend of what is traditionally considered masculine or feminine traits within our culture, is elaborated on by Olds (1981, p. 28) "the movement toward integrative ways of dealing with sex roles that is represented by the concept of androgyny occurs at the level of external behavior and cognitive attitudes, as well as at a more subtle level of internal values, modes of consciousness, and orientation to the world." According to Olds (1981), humans conceptualize the world into sets of opposites. This dualism appears in concepts such as birth-death, good-bad, self-other, past-future, and male-female. Differences occur in the conclusions drawn from these dualities. Some believe the opposites are absolute while others transcend the duality. "...in its broadest sense, androgyny is a holistic concept, a way of thinking about the totality of a person's life experiences" (Kaplan, 1980, p. 5). Androgyny is seen as a unity of the opposites or
integration of a whole. This unity is a recurring theme in Eastern and Western religious traditions with the yin and yang as one example. Within the creation stories there was a unity which split; to regain wholeness there is a pull toward the integration of the masculine and feminine. Kaplan (1980) suggests that "an androgynous person would be healthier, more adaptable, or better adjusted" than the person whose behavior is firmly rooted in sex-role stereotypes.

The factors presented cannot operate within an individual in isolation. An interesting connection between androgyny and environmental ethics is presented by Borden and Powell (1983) whose androgynous subjects score higher on the Environmental Concern Scale (ECS). This leads the researchers to the conclusion that "sex-role identification may be an important antecedent of environmental awareness and responsibility" (p. 271).

There are other connections. Androgyny is also related to creativity as creative individuals are found to be more androgynous than non-creative individuals (Hammer, 1984; Padgett, Cook, Nunley, and Carskadon, 1982). The creative individuals in these studies were reported to not adhere to sex-role stereotypes, but possess a fusion of feminine with masculine characteristics. Maslow (1968) considers self-actualization to be an intricate part of creativeness. If these relationships are presented full circle, we could hypothesize a relationship among the factors of androgyny, creativity, self-actualization and an individual's environmental ethic. Two questions arise: 1. Are persons who hold a stewardship or unity environmental ethic more self-actualized,
androgynous, creative individuals? 2. Does a composite of these traits indicate an integration of the self?

STATEMENT OF PROBLEM

The problem statement guiding this study is: Is there a relationship among self-actualization, creativity, androgyny, and an individual's attitude toward the environment (i.e. environmental ethics)? Is there an unifying premiss (common thread or theme) found throughout selected cultures for the concept of integration of the self.

PURPOSE OF STUDY

The purpose of this study is two-fold. The first is descriptive, using a concurrent correlational study to investigate relationships among creativity, androgyny, self-actualization, and environmental attitude. This study will provide evidence if such a relationship exists. The second purpose of this study is to develop theoretical constructs regarding integration of the self to environmental attitudes.

SIGNIFICANCE OF STUDY

This study assesses if bivarient relationships exist among creativity, androgyny, self-actualization, and environmental attitudes. Links among these factors will aid in the inclusion of holistic concepts, specifically in environmental education. This investigation may also create insight into relationships between Native American and Eastern philosophy and the Jungian concept of individuation as a means of exploring the integration of the self. These relationships might also provide a foundation for further study in regard to cultural approaches to the integration of the mind, body, and
spirit which would provide educators and educational psychologists information for further study in the area of environmental ethics and holistic education. Information gained would help address the problems of society and education (e.g. discipline, dropout rates) through development of a new curricula with movement toward lifelong learning, problem solving skills, creativity, and the realization of being part of a larger cosmic order.

STUDY QUESTION

The overarching question guiding this study is: Do bivarient relationships exist among androgyny, self-actualization, creativity, and environmental attitudes?

To obtain an answer to this question the following research activities were completed:

1) explored the literature on androgyny,
2) explored the literature on the concept of self in regard to selected schools of psychology,
3) explored the literature on creativity,
4) explored the literature on environmental attitudes,
5) administered instruments of androgyny, self-actualization, creativity, and environmental attitudes to a group of participants,
6) analyzed statistically the bivarient relationships among androgyny, self-actualization, creativity, and environmental attitudes, and
7) synthesized and discussed items 1-6 in terms of potential theoretical constructs of self and environmental attitudes.
DEFINITION OF TERMS

Androgyny: The concept of androgyny, which is understood as a blend of what is traditionally considered masculine or feminine traits is elaborated on by Olds (1981, p. 28) "the movement toward integrative ways of dealing with sex roles that is represented by the concept androgyny occurs at the level of external behavior and cognitive attitudes, as well as at a more subtle level of internal values, modes of consciousness, and orientation to the world." For the purpose of this research androgyny will be defined as a blend of traits that are considered masculine or feminine within our culture.

Creativity: There are many definitions of creativity. Most theories (personality or general) of behavior may be divided into three areas of thought: psychoanalytic, humanistic, or behavioristic. Creativity for the purpose of this study is defined along the lines of Davis' work related to problem solving and traits.

Individuation: A movement toward wholeness, a uniting of the unconscious and conscious. The process of becoming one's self (Loomis, 1991; Jung, 1964; Jacobi, 1951).

Self-actualization: There are many characteristics of self-actualization. For the purposes of this research self-actualization is defined as the full use and exploration of talents, capacities, potentialities, etc. (Maslow, 1970, p. 150) of the individual.

Self: The totality of the psyche. This includes the relationship between humans and the whole of nature.
LIMITATIONS OF STUDY

This study is designed to investigate relationships among the variables using a purposive sample. No generalizations will be made to populations.

ASSUMPTIONS

The following assumptions were made for the purposes of this study:

1. Self-actualization is a process of a fully functioning person.
2. Androgyny, creativity, and environmental attitude are linked.
3. Individuals are comprised of mind, body, and spirit.
4. Psychological states contribute to an individual's environmental attitude.
CHAPTER II

REVIEW OF RELATED LITERATURE

Literature reviewed is divided into two major sections. The first investigates the concept of the self, integration of mind, body, and spirit as a construct of wholeness and the theoretical implications of this concept in regard to human's relationship with nature. The second focus explores relationships among environmental attitudes, creativity, androgyny, and self-actualization as discussed in the literature.

THE CONCEPT OF SELF

Psychologists such as May, Rogers, and Jung present a concept called the self. Each definition is somewhat different, but all the concepts deal with the totality of the human in relation to expressing capabilities. May (1977), regards the concept of self as having two meanings. The first discusses self as the composite of the individual's capabilities. The second meaning "refers to the capacity of the human organism to have conscious awareness of its activities and, through this awareness, exercise a measure of freedom in directing these activities" (p. 354).

Rogers (1961) relates that beyond the surface of the problems a client presents there lies a central search which is the search for self, how to get in touch with the
real self and how to become this self. Getting to the real self Rogers calls the process of becoming. Through this process the individual 1) becomes more open to experience, 2) gains trust in one's organism (trust in feelings and tendencies), 3) utilizes an internal locus of evaluation, and 4) possesses a willingness to be in process (striving to continue to discover and become themselves, to stay in the process).

Jung (1959) states: "the personality as a total phenomenon does not coincide with the ego, that is, with the conscious personality, but forms an entity that has to be distinguished from the ego" (p. 5). Jung continues "I have suggested calling the total personality which, though present, cannot be fully known, the self" (p. 5). Bennet (1967) gives further insight into Jung's concept of the self by suggesting that the process of assimilation of the ego takes place as the conscious and unconscious begin to integrate. This process is referred to as Individuation.

INDIVIDUATION

Individuation is a concept presented by Jung. Wholeness, or the process of becoming whole, is stressed in the concept of individuation (Jung, 1964; Bennet, 1967; Jacobi, 1951). Similar concepts are presented by Rogers and Maslow in relation to wholeness—an integration of the self. This process of individuation "generally begins with a wounding of the personality and the suffering that accompanies it" (Jung, 1964, p. 169). There is also a boredom, that makes things seem "meaningless and empty." It appears that through this integration into wholeness an awareness of the unconscious is experienced, thus having an interaction between the conscious and unconscious. It should be mentioned at this point that according to
Jung (Jacobi, 1951) the unconscious is comprised of a personal and collective unconscious. The personal unconscious is much like Freud's concept of the preconscious in which events, emotions, and material may have been repressed or forgotten. This repressed or forgotten material can be brought into the conscious without too much effort. The collective unconscious contains material from the ancestral past and includes our prehuman past. The unconscious expresses through archetypes, symbols, and myths. It is through the recognition of these that movement of the psyche toward wholeness takes place.

MIND BODY DUALISM AND THE HISTORY OF SCIENCE

It is of extreme importance that the scientific paradigm be considered as humans struggle with the workings of the universe and their place in it. For as Harman (1988) states "Every society ever known rests on some set of largely tacit basic assumptions about who we are, what kind of universe we are in, and what is ultimately important to us. Some such set of assumptions can be found to underlie the institutions and mores, patterns of thought and systems of thought and systems of value, that characterize a society." Harman further explains that historically science has been founded in a positivistic, reductionist paradigm, therefore "...what is real (or at least discussible) is taken to be that which can be measured—that is, what is ultimately discernible to the physical senses, either directly or by the use of scientific instrumentation" (p. 12). This type of evaluation rejects a large part of information processing that effects values and decision making within the individual. "We believe, value, choose, and know unconsciously as well as consciously. Furthermore, our
perceptions, values, attitudes, and behavior are influenced far more by what is going on in the unconscious mind than by what is easily accessible to the conscious mind" (Harman, 1988, p. 17). Our relationship with nature has foundations in our view of science. It is from these dispositions that value judgements are made.

Sheldrake (1991) relates "We are all influenced by mechanistic habits of thought that shape our lives, usually unconsciously. If we are to hold these assumptions up to scrutiny, we need to look at their cultural origins and trace their development" (p. 5). According to Capra (1983) the foundation of Western physics and science was preceded in the sixth century B.C. by Greek philosophy where science, religion, and philosophy were not separate. But the latter Greeks, the Milesians, did not distinguish between spirit and matter, or between animate and inanimate. This concept is very much like the Native American's philosophy regarding the environment. Capra points out that this concept is also parallel to Eastern and Indian philosophy. Of the philosopher Heraclitus, Capra (1983) states "Heraclitus taught that all changes in the world arise from a dynamic and cyclic interplay of opposites and he saw any pair of opposites as a unity. This unity, which contains and transcends all opposing forces he called Logos" (p. 6-7). At this time there was no distinction between mind, body, and spirit. All of nature was alive, so to speak, as there was no distinction between animate and inanimate. Sheldrake (1991) also substantiates that animism was a central theme in Greek philosophy. Animism is the belief that natural objects posses souls and consciousness. This unity changed with the leatic school and what was called the Divine Principle. In this
principle a God that was both personal and intelligent directed the workings of the universe. Of this became the dualism that is prominent in Western philosophy. "Thus began a trend of thought which led, ultimately, to the separation of spirit and matter and to a dualism which became characteristic of Western philosophy" (p. 7). Moving to the 17th century, the philosopher Rene Descartes further emphasized the dualism of mind and matter. Animals had no souls and intellectual reason became the criteria for human beings placed at the top of the hierarchy. Mind and body had been split. This was the beginning of the mechanistic worldview perpetuated by Isaac Newton. "Then through the mechanistic revolution, the old model of the living cosmos was replaced by the idea of the universe as a machine. According to this new theory of the world, nature no longer had a life of her own, she was soulless, devoid of all spontaneity, freedom, and creativity. Mother Nature was no more than dead matter moving in unfailing obedience to God-given mathematical laws" (Sheldrake, 1991, p. 49). Stanislav (1993) attributes Newtonian science to limiting humans and their potentials, referring to the ability to mirror back the world Newtonian science describes. Any deviation from this is attributed to an overactive imagination or mental disorder.

Sheldrake (1991) attributes the reformation to setting the stage to further the fragmentation of humans and nature and the birth of mechanistic science. "Nature was already disenchanted and the material world separated from the life of the spirit; the idea that the universe was merely a machine fitted well with this kind of theology, and so did the construction of the realm of the soul to a small region of the human
brain" (p. 30). Other authors such as Callicott (1986), Stanislav (1993), Samples (1976), and Highwater (1981) also relate humans' separateness from nature to the objective empirical, mechanistic, linear, observable theory of science.

Nash (1989) discusses several concepts that became dominant after World War II. Ecology became "abstract, quantitative, and reductionist. Crop yields and mathematical modeling, not the ethical implications of the organic wholeness of life and matter dominated the new research agenda. Interdependence gave way as an organizing concept for product efficiency" (p. 73).

The question of what does it matter if we approach science from this theory arises at this point. The underlying premise in answer to this question relates to fragmentation. Mechanistic science stresses the fragmentation of humans, nature, and the cosmos. This type of approach also ignores the spiritual side of humans which was an important part of the exploration into humans' place in, and workings of, the world. It also ignores other information that may be brought into consciousness through means other than the senses.

This fragmentation was not always accepted by scientists as Swan (1990) explains "Once the social role of the scientist was filled by alchemists, shamans, priests, wizards, witches, sages, and Freemasons. Like modern scientists, these practitioners sought truth and order in the world but used nonlinear methods of divining" (p. 184). Samules and Samules (1975) report many scientific discoveries came about when individuals were in an altered state of consciousness, be it a dream state or a vision; but often this state of altered consciousness is reported by individuals
on the brink of discovery of a creative or scientific endeavor, and Capra (1983) reminds us of the everyday occurrences of insight. Swan (1990) supports this premiss and suggests that scientists should go on vision quests or dream treks. He goes as far as to suggest: "If scientists could relearn to talk to the trees, like their predecessors did, a lot of malevolent science we have to live with today would cease to exist" (p. 185).

Of this Western, mechanistic view which fragments humans and nature, mind, body, and spirit, Capra (1983, p. 9) reflects:

The belief that all these fragments—in ourselves, in our environment, and in our society—are really separate can be seen as the essential reason for the present series of social, ecological, and cultural crises. It has alienated us from nature and from our fellow human beings. It has brought a grossly unjust distribution of natural resources, creating economic and political disorder. An ever-rising wave of violence, both spontaneous and institutionalized, and an ugly, polluted environment in which life has often become physically and mentally unhealthy.

Capra is not alone in his accusations. Sheldrake (1991) relates the notion of viewing nature as mechanistic as having given humans a sense of being able to rise above animistic, primitive ways of thinking and having gained a degree of control. Samples (1976) states "The total human is part of the natural world. The fragmented human is part of the cultural equation" (p. 121). This spiritual, intuitive, subjective component of the total self is being pushed aside by a more pragmatic, linear mode of consciousness. Harman (1988) also addresses the fragmentation of humans and nature. "A technological ethic of 'man controlling nature' had contributed to the separation of humans from the matrix of life around them" (p. 118). Capra (1983) emphasizes the fragmentation as a cultural preference of masculine values which is
symbolized by yang over the corresponding female values symbolized as yin. Of this he remarks "We have favored self-assertion over integration, analysis over synthesis, rational knowledge over intuitive wisdom, science over religion, competition over cooperation, expansion over conservation, and so on. This one-sided development has now reached a highly alarming stage; a crisis of social, ecological, moral, and spiritual dimensions" (p. xvi).

PARADIGM SHIFTS: COMING FULL CIRCLE IN SCIENCE

Kuhn (1962) introduces the concept of paradigm shift in which accepted modes of thought are challenged and eventually revised. As knowledge is gained, ideas are challenged. The earth is no longer thought to be flat, the sun does not revolve around the earth, nor is matter thought of as discrete units that can be aptly measured and observed.

What was professed by ancient societies and Primal peoples, interconnectedness, integration of mind, body, and spirit, acceptance of intuitive knowing, and the necessity of harmony and balance within systems, be they natural or human systems, is being brought to the forefront by recent paradigm shifts in science.

What was professed by ancient societies and Primal peoples is being reconsidered within the scientific and lay communities. In times past, mind, body, and spirit were connected in one being, but connections went even further. There was a connection among all of nature and humans. Dreams were sacred relaying messages and power was a spiritual connection. There was a "something" that connected all. It was from within this circle that respect, harmony, and balance of all was expected and
accepted. Throughout history, this sense of harmony and balance was pushed aside for a more positivistic, mechanistic view, disconnecting humans from nature and fostering an anthropocentric view.

The interconnectedness of all that exists is being presented with ideas such as systems theory, quantum theory and theories as is presented by Harman (1988) in establishing three basic metaphysical perspectives. Briefly, these three are explained.

M-1. In this perspective the "basic stuff" that makes up the universe is matter-energy.

Whatever consciousness is, it emerges out of matter (that is, the brain) when the evolutionary process has progressed sufficiently far. Whatever we can learn about consciousness must ultimately be reconciled with the kind of knowledge we get from studying the physical brain, for consciousness apart from a living physical organism is not only unknown, it is inconceivable.

M-2. An alternate metaphysic is dualistic. There are two fundamentally different kinds of basic stuff in the universe: matter-energy stuff and mind-spirit stuff. Matter-energy stuff is studied with the present tools of science; mind-spirit stuff must be explored in other ways more appropriate to it (such as inner, subjective exploration). Thus there develops, in essence, two complementary kinds of knowledge; presumably there are areas of overlap (such as the field of psychic phenomena).

M-3. Yet a third metaphysic finds the ultimate stuff of the universe to be consciousness. Mind or consciousness is primary, and matter-energy arises in some sense out of mind. The physical world is to the greater mind as a dream image is to the individual mind. Ultimately the reality behind the phenomenal world is contacted, not through the physical senses, but through the deep intuition. Consciousness is not the end product of the material evolution; rather consciousness was here first! (Harman, 1988, p. 34)

Harman claims there is a shift from the M-1 to M-3. A shift from matter giving rise to mind, to mind giving rise to matter is presented in relation to intuitive
unconsciousness. The unconscious had generally been regarded as something so intangible that it is disregarded in empirical scientific endeavors. In the M-3 paradigm, both creativity and consciousness are given credence. "Management development courses in recent years have been increasingly overt about using such techniques as affirmation and inner imagery to remove barriers to creativity and intuition" (Harman, 1988, p. 130). Organizations such as The Pacific Institute are educating companies. For example, AT&T, GTE, Kraft, Hallmark, American Air Lines, ARCO, Dupont, Exxon, General Motors; and internationally, Coke of Australia, McDonalds of Hong Kong, Singapore and Bangkok, ANZ (Bank of Australia and New Zealand), ESCOM (utility company of Southern Africa), and other companies in Europe, Asia, Spain, and in mainland China, (Fitterer, 1994) use some of the techniques that are applicable to the M-3 paradigm. In these sessions employees are taught to write affirmations and utilize imagery in relation to goal setting. Much of the time, in these development courses, one of the focuses is on the power of the unconscious and the integration of mind and body. What Harman (1988) relates parallels the courses. "There are so many practical applications of the principle that we affirm and program into the unconscious belief system, we tend in subtle ways to bring about when we establish and affirm an intention or a goal, imagining that it is already so, the unconscious mind is programmed to achieve that goal even in ways which the conscious part of the mind does not plan or understand" (p. 77).
This idea of consciousness appears in other literature. Human consciousness is discussed by Stanislav (1993) Goswami (1993), and Callicott (1986). Stanislav (1993) suggests, according to research on consciousness, that views of the nature and dimensions of the psyche need to be revised. "The exploration of the microworld soon revealed that the universe of everyday life, which appears to us to be composed of solid discrete objects, is actually a complex web of unified events and relationships. Within this new context, consciousness does not just passively reflect the objective material world; it plays an active role in creating reality itself” (p. 6). Callicott relates consciousness and human relation to the environment.

However if the world is one’s body and one’s consciousness not only images in its specific content the world around, but the very structure on one’s psyche and rational faculties are formed through adaptive interaction with the ecological organization of nature, then one’s self, both physically and psychologically, gradually merges from its central core outward to the environment. One cannot, thus, draw hard and fast boundaries between oneself, either physically or spiritually, and the environment. (Callicott, 1986, p. 315)

Fields of energy can exist in many forms and are present in all things (Sheldrake, 1991). Sheldrake goes on to present a hypothesis of formative causation which "suggests at all levels of complexity—including molecules, crystals, cells, tissues, organisms and societies of organisms are organized by 'morphic-fields'” (p. 110). Harman (1988) adds to the concept of morphic fields. "The term ‘morphic field’ has been used since the 1920s to describe the organizing principle whereby the many cells are guided to combine, with differentiated functions, to produce a living organism of particular form" (p. 100). Swan (1990) addresses the concepts of energy
as Sheldrake hypothesises and states: "All pollution starts in the mind, and corruptions of the relationships we have with the power of our thoughts is a form of pollution we can all do something about" (p. 214). In defense of his statement Swan (1990) relates "This idea is not that far out. The view that the power of thought can influence the ambiance of place may be supported if the theory of 'morphogenic fields' advanced by plant physiologist Rupert Sheldrake can be verified" (p. 214).

The mind body dualism is challenged as individuals consider the effects of what may be called the spirit. The spirit is brought into consideration as not being separate from the body or a mystical magical essence that need not be considered in scientific communities, but in a form of energy present in all things. What Stanisalav (1993) refers to as nonordinary states of consciousness were accepted as a normal part of life in the premechanistic world view. The concept changed with the emergence of positivistic science where everything that could not be measured and observed through linear methods was discounted. Thus the intuitive aspect of knowing was discounted. In the beginning of empirical science there was a concentration "'where the light was better'—on explorations of the quantitatively measurable aspects of the physical environment, ignoring issues of the human mind and spirit central to the humanities and the religions" (Harman, 1988, p. 27). Highwater (1981) takes scientific objectivity a step further in that assumptions have been made that the peoples of the west are superior and this superiority is supported by objectivity. Here again the intuitive ways of knowing so familiar to Primal peoples are discounted in the light of "scientific objectivity."
Primal peoples still regard "non-ordinary states of consciousness" as significant. It is at these times, in such states, that reports of being one with the universe, a part of the whole or interconnected are reported (Stanislav, 1993; Swan, 1990; Harman, 1988). This is suspiciously like elements of the flow phenomenon (Csikszentmihalyi, 1975) in which people experience a loss of sense of time, of themselves, and a sense of harmony and union with their surroundings.

There is a call to consider intuitive ways of knowing or at least consider consciousness and spiritual states of mind so that different paradigms of creativity are presented. Swan (1990) explains "The 'new science’ which will guide humanity into the twenty-first century must be able to account for and work with such conditions as spiritual states of consciousness and the things which occur as a result of such states, because they are an integral and extremely important component of human existence" (p. 208). He continues that one of the key elements must be the consideration of life energy or life force. But Swan is not the only author to propose such a concept. Sheldrake (1991) queries what happens at the point of death, be it a plant, animal or human. "Something seems to have left it—the life-force, the breath, the spirit, the soul, the subtle body, the vital factor, or the organizing principle" (p. 97). This is what is referred to as energy and will take on new forms after death. When one of the principles of energy is recalled, that it can neither be created nor destroyed only change forms, the idea becomes more plausible. Sheldrake then turns the discussion to holistic theory which focuses more on systems dynamic with movement and activity, and regards all of nature as alive. Everything is an organism. In relation to
matter, consciousness, and creativity, Stanislav (1993) discusses "non-ordinary" states of consciousness of which creative individuals are familiar. These kind of experiences "suggest that there is a constant interplay between the inanimate objects we generally associate with the material world, the world of consciousness, and creative intelligence. Rather than being from two distinctly different realms with discrete boundaries, consciousness and matter are engaged in a constant dance, their interplay forming the entire fabric of existence" (p. 105).

As the investigation progresses into such matters it becomes reasonable to consider quantum theory. Of quantum theory Capra (1983, p. 57) explains:

Quantum theory thus reveals a basic oneness of the universe. It shows that we cannot decompose the world into independently existing smaller units. As we penetrate into matter, nature does not show us any isolated 'basic building blocks; but rather appears as a complicated web of relations between the various parts of the Whole. These relations always include the observer in an essential way.

Of quantum theory Callicot (1986) relates that other organisms are "in their entire structure, from subatomic microcosm to ecosystemic macrocosm-patterns, perturbations or configurations of energy" (p. 310). Stanislav (1993) also recognizes this energy holistically "so now we have a universe that is an infinitely complex system of vibratory phenomena rather than an agglomerate of Newtonian objects. These vibratory systems have properties and possibilities undreamed of in Newtonian science" (p. 7).

DeBerry (1993) states of the relation of quantum physics and ecology: "It turns out that the practical implications of quantum physics are closely related to ecology, a discipline that stresses the indivisible and holistic aspects of our environment" (p. 8).
The author continues to explain that such factors are ignored not because of "scientific efficacy or clinical success, but rather with external reasons of a sociopolitical economic nature" (p. 20).

Chaos theory is also considered in relation to ecology, but people have a tendency to avoid chaos because of a need for closure and certainty. There is also a need existent to label and compartmentalize. "Chaos terrifies, and in many ways our response to the dynamic vitality and unpredictability of nature evokes this terror." "In contrast, nonlinear phenomena represent nonsymmetrical, paradoxical and unpredictable processes in which small initial changes can lead to large or non-apparent outcome stages. These features are connected to the development of chaos theory, a contemporary scientific perspective that concerns itself with nonlinear phenomena" (DeBerry, 1993, p. 33).

Balance and harmony which Primal peoples emphasize should be regarded as a delicate balance of all of nature, including humans. The self, the totality of the individual, must also be complete and in harmony and balance with the rest of nature. The M-3 assumptions emphasize wholeness, a balance between masculine and feminine qualities, and the fact that "we are one with nature, and in harmony with life processes" (Harman, 1988, p. 122).

Quantum physics and chaos theory are both at the front of today's physics with very serious implications for the human's place in the natural system, relating ethically to all of nature. "If quantum theory and ecology both imply in structurally similar ways in both the physical and organic domains of nature the continuity of self and
nature, and if the self is intrinsically valuable, then nature is intrinsically valuable. If it is rational for me to act in my own best interest, and I and nature are one, then it is rational for me to act in the best interests of nature" (Callicott, 1985, p. 275).

Another component of the totality of the self is the unity of the male and female aspects of the individual. The balance and harmony that is experienced is also presented through the theme of the male and female in relation to nature and the self.

THE THEME OF MALE AND FEMALE IN NATURE AND SELF

The theme of male and female is presented throughout literature and becomes an important component in relation to human’s place in nature. In traditional cultures of the world, the earth is thought of as Mother (Sheldrake, 1991). The theme of maleness and femaleness is carried into a culture’s perception of the environment. An example is the Native people who view the earth as Mother and the sky as Father. Rather than unity, as is represented by the Native and Eastern cultures, the west emphasizes the dichotomy of male and female and these traits are assigned to nature, exemplifying and playing out the connotations of the assigned stereotyped traits. Feminine traits of nurturing, holism and intuition, are contrasted to the masculine traits of conqueror, logic, and linear thought.

Sheldrake (1991) believes that nature can not be soley female, that it must contain both male and female. Just as he believes that God can not be only male. Relating this concept to a Primal philosophy in which the earth is Mother and the sun or sky is Father, the components of male and female must exist within nature also. "If the earth is the realm of the Mother, the heavens are the realm of the Father, and
all life depends on their relationship. Or if the feminine principle is the cosmic flux of power and energy, the masculine is the source of form and order; like Shikti and Shiva in Indian Tantrism. Or, as in the Taoist view, there is a continuous interplay of the feminine and masculine principles, yin and yang, throughout all nature" (p. 191).

Schneider and Morton (1981) relate a unifying pattern to a cycle with the representation being the circle. The circle, he states, is one of the earliest symbols of wholeness. These cycles do not have to be perfect replicas. "And it is of fundamental importance that cycles in nature may alter, for without change there can be no growth, no decay" (p. 35).

This theme of assigning traits of masculine and feminine not only applies to the environment, but is also applied by the west to the human mind in relation to the hemispheres of the brain. Authors such as Samules and Samules (1975) present this duality of the human mind with discussions of right brain and left brain functioning. The authors note "The cerebrum of the brain is divided into two hemispheres, each of which has specialized functions. The left hemisphere is concerned with verbal/analytic information, while the right hemisphere is basically concerned with visual/intuitive information" (p. 62). Much research was done by Dr. Roger Sperry, a Nobel prize winner, in the area of brain function. Typically the left brain is regarded as the logical, analytic linear side, which is assigned to the masculine realm, while the affective, holistic right hemisphere is associated with the feminine. It is interesting to note that authors such as Torrance and Mourad (1979) regard creativity as associated with right hemispheric or integrated brain functioning. Creativity and
the right hemisphere, or integrated brain functioning is then related to the feminine as is Primal and Eastern concepts of the environment. This association then reflects creativity being associated with the feminine and wholeness. Yet, creativity is also associated with androgyny (Hammer, 1984; Roe, 1976). According to Borden and Powell (1985) androgyny is associated with environmental attitude. However, Capra (1983) views Western society as favoring the masculine component. Samples (1976) also relates the favoritism of the left hemisphere to Western society. Thus wholeness and traits associated with the feminine have a relationship to environmental attitudes and creativity.

In this regard, the philosophy of Mother Earth or Mother Nature is addressed. Sheldrake (1991) exemplifies the attitude of the feminine aspects as an important component of human relation with nature as he explains "These feminine associations play an important part in our thinking. Our conception of nature is intertwined with ideas about relations between women and men, between goddesses and gods, and between the feminine and the masculine" (p. 11). Sheldrake also concludes, from the Judeo-Christian supremacy of God the Father, the "desacralization of the natural world." He continues the discussion relating in the Seventeenth century "nature became nothing but inanimate matter in motion, created by God and mechanically obedient to his eternal laws. Nature was no longer acknowledged as Mother, and no longer considered alive. She became the world-machine, and God the all-powerful engineer" (p. 20).
There are those who attribute the dominion attitude toward nature to this reflection of male superiority and dominance over femaleness, for examples see works on eco-feminism (Warren, 1987; Zimmerman, 1987). Booth and Jacobs (1990) aptly summerize: "In particular, ecofeminism equates the suppression and dominations of nature with dominations of women, and for similar reasons. Each was, and is, preceived as dangerous and in need of control. Ecofeminism encourages more spiritual approaches to the natural world, in complement to other approaches, and as such, offers an alternative to the subject-object dualism that so often has characterized our relationship with the natural world" (p. 29).

According to Sheldrake (1991) "The greatest prophet of the conquest of nature was Francis Bacon" (p. 40). This statement is based on Bacon equating dominion over nature to the naming of the animals (Genesis 2:19-20) since this act took place before Eve, woman had no part. The idea of male conquest of nature was perpetuated. "Many of the early Fellows of the Royal Society followed Bacon in his use of the epithet 'masculine' for privileged and productive knowledge and continued to speak of capturing, dominating, and subduing nature" (p. 43-44).

Capra (1983) attributed Western society with overemphasizing the male (yang) aspects such as aggressiveness and rational thinking. It is in this way that the feminine, the yin, which is associated with intuition, the mystical and psychic, is suppressed by a male-oriented society. It is within this polarity, a division of unity of the male-female, that Western scientific thought is grounded. It is grounded in a division of mind, body, and spirit and the polarity of the opposites the male-female.
INTEGRATION

In the previous section, fragmentation was discussed in regard to the traditional Western mechanistic view of science. This fragmentation also encompasses basic assumptions of male-femaleness. It is from this personal and cultural belief system of fragmented parts that the universe and humans place in it are viewed. Harman (1988) also includes unconscious assumptions about the self, and the nature of the universe in one's belief system. This unconscious aspect can be considered a feminine component, for intuition is regarded as feminine. The pulling together of the fragmented parts of the male-female, the conscious and the unconscious, the mind, body, and spirit results in an integrated whole, reacting to and being reacted upon by and with the environment as an integrated self.

The union of male and female to create the whole is "implied in the sexual metaphor; the generative power of father and mother depends on their union, and their offspring unite aspects of both parents. This is expressed in the most direct way in Indian tantric images of Shakti and Shiva in sexual embrace; in a more abstract manner in the Taoist representation of yin and yang intertwined and interpenetrating within a circle unifying both; the Tao" (Sheldrake, 1991, p. 196).

Self-actualization and individuation may be representative of the integration of the self; of the unity of the male and female aspects of the individual. The integration of the self relates to a blending of mind, body, and spirit with a focus on utilization of both the conscious (male) and the unconscious (female) aspects of the human mind.
Recent paradigm shifts have established the universe as no longer made up of isolated blocks or units that can be categorized and measured in isolation. With the advent of quantum and chaos theory the world is considered to be dynamic, moving, and changing; a complex web of relationships able to affect systems within systems. The observer is also considered to affect and take part in the change and movement of these systems, being a system full of energy him/herself. An energy flow is present in all systems.

Through Gaia theory the earth is also considered to be a living entity involved in the dynamic interplay of energy flow (Lovelock, 1979). These concepts, although gaining credence through the new paradigms of science, are not new to the worlds of Primal and Eastern peoples. These peoples have acknowledged the existence of such energy within the human body in the belief of the chakra systems. In this belief system energy flows from the root chakra to the crown chakra. Waters (1963) relates a similar system within Hopi belief: "Tibetan and Hindu mysticisms, like Hopi mysticism, postulate a similar series of centers of force or psychophysical centers in the human body, in which psychic forces and bodily functions merge into each other. These chakras, as described, coincide with those of the Hopis" (p. 10).

Many of the experiences described by Native peoples on a vision quest, individuals at sacred spaces and the occurrences when all the chakras are opened, are similar to what Csikszentmihalyi (1975) calls flow. Flow is described as "a holistic sensation that people have when they are acting with total involvement" (p. 36). This also involves a merging of action and awareness, and irrelevant stimuli are excluded.
"They concentrate their attention on a limited stimulus field, forget personal problems, lose their sense of time and of themselves, feel competent and in control, and have a sense of harmony and union with their surroundings" (p. 182). The experience is usually powerful. Judith (1990) describes the experience in relation to chakra energy. "This change may be experienced as increased alertness, increased insight, a feeling of weightlessness, a feeling of purity within the body, or extreme joy. There is some evidence that it sets up a wavelike rhythm which triggers the pleasure centers of the brain, giving us the ‘blissful state’ so often described by mystics" (p. 38). Swan (1990, p. 104) reports experiences at sacred spaces:

As they reach their destination, a sense of emotional arousal and extra energy are present. Then something happens which seems to ‘trigger’ their mental process, shifting their mindset into some new dimensions of consciousness. In this transcendent state, unusual events take place in which the normal time-space frame of reference is non-existent, and the personal experience is intense and engages mind, body, and spirit. While in this state of expanded mindfulness, an extraordinary feeling of unity and reality occurs, and unusual events happen in the surrounding world.

Such experiences are also reported by creative people when in flow. It is interesting to note that the organization of the chakras and the physical or psychological needs are very much like Maslow’s hierarchy of needs. For example, Rogers (1969), Maslow (1968), Mooney (1956), and Davis (1986) relate self-actualization to creativity. Authors such as Hammer (1984) and Roe (1976) have found androgyny to be directly related to creativity. In regard to individual’s attitude toward the environment, Borden and Powell (1983) have found a relationship between androgyny, and environmental attitudes. Figure 1 represents these relationships. The
possibility exists that a relationship could exist among the factors of self-actualization, creativity, androgyny and environmental attitudes. The implications for further research are numerous if in fact such relationships exist, benefiting both environmental education and psychology.
Theoretical Relationship of Creativity, Self-actualization, Androgyny and Environmental Attitude
SELF-ACTUALIZATION

Self-actualization is a concept postulated by Maslow as part of a hierarchy of needs. Everyone, according to Maslow (1970), possesses the innate tendency to become self-actualized at various points or times. Swan (1990, p. 196) considers self-actualization to be an essential component of the development of a positive environmental ethic.

Maslow’s research on self-actualization clearly shows that the real leaders of both past and modern times do not develop their zest for life and learning through conventional schooling. My own research on the development of environmental leaders confirms this. Environmental values arise from emotional experiences which serve as the generating forces for action. Schools can help people acquire skills, but unless what they offer is packaged in the right way and rooted to some healthy human motivation other than the fear of failure, they will soon become like dinosaurs going extinct.

Maslow’s (1970) hierarchy of needs consists of: 1) physiological needs which include food, water, air, sleep, and sex, 2) safety needs which include security, order, protection, and freedom from fear and anxiety, 3) belongingness and love which is a need for relationships and a sense of being part of a community or group, and 4) esteem needs which include the need for self respect and the esteem of others, they also include a need to achieve.

As lower level needs such as the physiological needs are satisfied, higher level needs develop. At the top of the hierarchy is the need for self-actualization. Maslow (1970, p. 46) comments "even if all these needs are satisfied, we may still often (if not always) expect that a new discontent and restlessness will soon develop, unless the individual is doing what he individually is fitted for. A musician must make music,
an artist must paint, a poet must write, if he is to be ultimately at peace with himself. What a man can be, he must be. He must be true to his own nature. This need we call self-actualization.

Maslow (1970) lists the characteristics of self-actualizing people:

1. More efficient perception of reality and more comfortable with it

"In art and music, in things of the intellect, in scientific matters, in politics and public affairs, they seemed as a group to be able to see concealed or confused realities more swiftly and more correctly than others" (p. 153).

2. Spontaneity, simplicity, naturalness

This does not refer to unconventional behavior. "It is his impulses, thought, consciousness that are so unusually unconventional, spontaneous, and natural" (p. 157). They are very ethical individuals even though sometimes their ethics are not those of the majority. Maslow also asks the interesting question of self-actualizing people: "Could these self-actualizing people be more human, more revealing of the original nature of the species, closer to the species type in the taxonomical sense?" (p. 159).

3. Problem centering

Self-actualizing people have a mission in life, are focused on problems outside themselves. They are also concerned with philosophical or ethical issues.

4. The quality of detachment, the need for privacy

The need for privacy and solitude is greater than in the average person. Self-actualizing people are more problem centered than ego centered.

5. Autonomy, independence of culture and environment, will active agents

They are not dependent on extrinsic satisfactions. Of independence of the environment Maslow elaborates: "These people can maintain a relative serenity in the midst of
circumstances that would drive other people to suicide; they have also been described as 'self-contained'" (p. 162).

6. Continued freshness of appreciation

"Self-actualizing people have a wonderful capacity to appreciate again and again, freshly and naively, the basic goods of life, with awe, pleasure, wonder, and even ecstasy, however stale these experiences have become to others..." (p. 163).

7. The mystic experience, the peak experience

Maslow elaborates on the peak experience: "These were the same feelings of limitless horizons opening up to the vision, the feeling of being simultaneously more powerful and also more helpless than one ever was before, the feeling of great ecstasy and wonder and awe, the loss of placing in time and space with, finally, the conviction that something extremely important and valuable had happened, so that the subject is to some extent transformed and strengthened even in his daily life by such experiences" (p. 164).

8. Gemeinschaftsgefühl

This word Maslow borrowed from Adler to express a feeling of identification, sympathy, and affection for fellow human beings as expressed by self-actualizing individuals. They also have a genuine desire to help the humankind.

9. Interpersonal relations

Self-actualizing individuals are reported to have deeper and more meaningful interpersonal relations. They tend to be kind and patient, and have a small circle of friends. They also attract followers, admirers, friends and even disciples or worshipers.

10. Democratic character structure

"They can be and are friendly with anyone of suitable character regardless of class, education, political belief, race, or color"
They show humility and respect and can become humble with people that have a skill or can teach them something.

11. Discrimination between means and ends, between good and evil

Focused on ends rather than means, they, however, regard as ends experiences and activities with the same respect that others regard means. In other words, they enjoy the journey as much as the destination.

12. Philosophical unhostile sense of humor

Not an average sense of humor, they are described as being philosophical in their humor. Humor is generally aimed at the human situation.

13. Creativeness

This is a universal characteristic of self-actualizing people. This type of creativeness is described as "...kin to the naive and universal creativeness of unspoiled children" (p. 170).

14. Resistance to enculturation, the transcendence of any particular culture

Self-actualizing individuals resist enculturation and seem to have a "certain inner detachment from the culture in which they are immersed" (p. 171).

Most of Maslow's research focused on those who had reached self-actualization and therefore were considered psychologically healthy. According to Schultz and Schultz (1992) Maslow's research methods and data were criticized. The sample size was small (about 24) and therefore no generalizations could be made. The subjects were selected according to Maslow's criteria and therefore not regarded as adhering to scientific procedures. The criticism was made that he did not follow scientific research methodology. Maslow argued that self-actualization could not be studied using such methods. Crooks and Stein (1988) also point out that a major criticism of
humanistic theories in general is the lack of strict objective scientific methodology. The methods employed by psychologists such as Rogers and Maslow are too subjective and rely upon nonverifiable observations. Crooks and Stein are advocating a quantitative approach to research but there is a school of thought that would disagree with them. Qualitative research methods are accepted and do include alternative methods. For a discussion on qualitative methods see Guba and Lincoln (1989), and Lincoln and Guba (1985).

DeBerry (1993) believes that we do not experience reality with all that is available to us. The Western culture places emphasis on competition and materialism and therefore little value is placed on peak experiences, which reflect an integrated consciousness.

Stanislav (1993) discusses transpersonal experiences which are very much like Maslow's idea of peak experiences. Of these experiences he states: "Transpersonal experiences often lead to a deepened understanding of the role of primal forces in nature, an enhanced awareness of the laws that govern our lives, and an appreciation for the extraordinary intelligence that underlies all life processes. Experiences of this kind typically result in an intensified concern for the natural environment" (p. 103). Those who have had these experiences are also "deeply moved by the notion of our planet as a cosmic unity" (p. 109). Perhaps a strange concept to Western peoples, this is one that is readily accepted by Eastern and Primal cultures.
SENSATION SEEKING

Sensation seeking is a trait within people defined by Zuckerman (1972) as "a person who needs varied, novel, and complex sensations and experiences to maintain an optimal level of arousal" (p. 308). Optimal level of arousal is a concept presented by Hebb (1955). Briefly stated, a stimulus is needed to cause arousal which motivates the individual. There is an optimal level between stimulus and ability at which performance is at its best. When there is too much or too little stimuli, efficiency decreases. This optimal level is a balance between boredom and anxiety.

Much work has been done in this area by Fiske and Maddi (1961), and Berlyne (1960). Sensation seeking consists of four factors: 1) boredom susceptibility, 2) disinhibition, 3) experience seeking, and 4) thrill and adventure seeking. An instrument was developed based on these four factors by Zuckerman (1975). A study by Davis, Peterson, and Farley (1973) found a relation between sensation seeking and creativity remarking the sensation seeking scale "may be a better measure of creativeness than some creativity tests" (Davis, 1986, p. 39).

INTRINSIC MOTIVATION

Extrinsic motivation is based on a reward from outside oneself, be it money, recognition, or compliments. The motivating factor is the external reward. Intrinsic motivation is defined as activities done for no external reward (Deci, 1975). Some of the components of intrinsic motivation are challenge, curiosity, and the experience being rewarding in its self. Intrinsic motivational behaviors also encompass sensation
seeking. Of intrinsic motivation Csikszentmihalyi (1988) states: "It takes intrinsic motivation to break to new levels of complexity in thought or behavior" (p. 373).

CREATIVITY

Creativity is a concept that has been rather illusive for psychologists to study. Creativity usually implies a "creative person" doing "creative acts," creating a work of art or dance, but creativity also has the implications of creation. Sheldrake (1991) reminds us of creation myths that exist in all cultures. These creation stories explain how something began, was given birth to and "became." Of these stories, he claims, the appeal in part is the fact that everything is related and has a common source be it galaxies, planets, crystals, plants, animals, and people. "Another of the intuitive attractions of the modern story is its affirmation of creativity in the universe, in life, and in humanity. The creative process not only occurred long ago in the mythic time of origins; it has been going on ever since and is still going on today. This vision reinforces our modern fascination with innovation, change, and development; we can experience human creativity as part of the cosmic creative process" (p. 125).

Creativity and consciousness have become a matter of concern. Stanislav (1993) explains: "The experience of cosmic consciousness provides important insights for deepening our understanding of the highest forms of creativity. The literature is filled with examples of extraordinary artistic, scientific, philosophical, and religious inspirations that came from a transpersonal source that occurred in non-ordinary states of consciousness" (p. 167). These non-ordinary states of consciousness that are so familiar to highly creative people are also readily accepted in Primal cultures.
In a review of the literature, creativity appears to be without a clear, concise definition. Creativity is complicated and difficult to understand; "Creativity therefore, cannot be explained according to any traditional model of explanation by cause or prediction" (Rothenberg and Hausman, 1976, p. 23). Researchers have found that definitions are dependent upon the context of application. Freedman (1976) and Ackoff (1981) each found several hundred definitions of creativity (cf. Rickards, 1985). Although creativity has been defined by numerous authors, certain components deserve consideration as they relate to cognitive and psychological traits.

One of the research classics Study of Creativity (Wallas, 1926) proposed four stages of the creative process. Preparation is a time of gathering information related to the subject at hand. In the second stage, incubation, the problem and the information become subject of the unconscious and there is no conscious thought about the information. This is the time of taking walks in the woods, or engaging in other activities. It is also a time to listen to the inner voice and keep a dream journal. The third stage is illumination and may take minutes, hours, days, or months. This is when the light comes on, the "ah-ha", the Yes, I've got it!, in which the solution comes forth, and feelings of excitement are present. In the fourth stage, verification, the conscious is again back at work and details are worked through.

There is also a side of investigation into the creative process that is not clearly definable and involves elements that are difficult to categorize and measure. This is the mystical, magical side of the creative process. It is what goes on within the incubation and illumination stage that promotes the mystery. Many times images are
the mode of communication as problems are solved and questions answered.

Rothenberg and Hausman (1976, p. 23) state: "Creativity is not only complicated and
difficult to study and understand, but it is radically different from other phenomena
that can be explained in terms of cause." There are therefore, drawbacks in the
Wallas model as Sanders and Sanders (1984) explain: "...Wallas essentially described
scientific problem solving rather than the creative process; and the model does not
explain the creative process of the artist—where illumination is an ongoing process,
not merely the sudden glimpse of a possible product. Further, Wallas described
sequenced stages, but these stages do not automatically generate creative products.
There is a need to expand the orderly structure of Wallas's paradigm, to develop an
awareness of the creative simultaneity of 'right brain thinking', the thoughts that come
in images not words" (p. 32).

Mooney (1956) presents four approaches to creativity: (1) the product, (2) the
process, (3) the person of the creator, and (4) the environment. Each of these
approaches appeals to different people depending upon the purpose of looking at
creativity. The products approach is favored by those such as administrators; the
process approach by those who are themselves creative; the person approach by those
who are responsible for choosing individuals such as managers who look for extrinsic
signs of creativity. The approach of environment is favored by educators,
anthropologists, and managers who look at the environment necessary for individuals
to become creative. It is with these purposes in mind that different paradigms of
creativity are presented.
CREATIVITY: THREE PARADIGMS

Most theories (personality or general) of behavior which attempt to explain creativity may be divided into three areas of thought, psychoanalytic, humanistic, or behavioristic (Woodman, 1981). Davis (1986) identifies the three theoretical schools as psychoanalytic, self-actualization, and behavioristic.

The psychoanalytic theories include works of Freud, Jung, Rank, Kris, and Kubie. Freud saw creativity as rising from conflict between sexual urges of the id and the superego. Sexual energy is channeled into creative fantasy and products (Taylor, 1976). As a psychologist, Jung (1933) acknowledged the need to establish casual relationships, but the issue of creativity resides beyond such scrutiny. "Yet he can never make good this claim in the fullest sense, because the creative aspect of life which finds its clearest expression in art baffles all attempts at rational formulation. Any reaction to stimulus may be causally explained; but the creative act, which is the absolute antithesis of mere reaction, will forever elude the human understanding. It can only be described in its manifestations; it can be obscurely sensed, but never wholly grasped" (p. 177).

Jung saw creative processes as an interaction between the conscious and unconscious mind. The act of creating is also influenced by the collective unconscious, in which there is a transforms of archetypal themes of the collective unconscious. This accounts for the universal appeal of art (Rothenberg and Hausman, 1976, p. 121). Jung (1933) also identifies two modes of artistic creators, the psychological and the visionary. The psychological type draws on consciousness and
"belongs to the realm of the understandable. Even the basic experiences themselves, though not rational, have nothing strange about them; on the contrary, they are that which has been known from the beginning of time—passion and its fated outcome, man’s subjection to the turns of destiny, eternal nature with its beauty and its horror" (p. 180).

The visionary appears to be the opposite, drawing on the unconscious. "It is a strange something that derives its existence from the hinterland of man’s mind—that suggests the abyss of time separating us from pre-human ages, or evokes a superhuman world of contrasting light and darkness. It is a primordial experience which surpasses man’s understanding, and to which he is therefore in danger of succumbing" (p. 180).

Rank saw the artist in conflict with society. "The creative impulse then may be considered the pressure of desire to be an individual (life impulse) in the service of the individual will." "Rank viewed the creative individual as representative of ideal functioning or ideal mental development in the human being" (Woodman, 1981).

Creativity resulted from urges from the id in terms of both sex and aggression. (cf. Rothenberg and Hausman, 1976, p. 143). Kris and Freud thought creative thinking involved a regression to childlike modes of thought (Davis, 1986).

Kubie (1958) emphasized the preconscious in which creativity takes place. It is within the preconscious that free play occurs with meanings and ideas, as the preconscious is not bound by the rigidness of the conscious or the unconscious.
The humanistic school of thought includes Carl Rogers and Abraham Maslow. They are of the humanistic-self-actualized orientation in explaining the creative process. Rogers (1961, p. 350) defines creativity as "...the emergence in action of a novel relational product, growing out of the uniqueness of the individual on one hand, and the materials, events, people, or circumstances of his life on the other." He also makes no distinction between types of creativity in the creative process. The process is the same. In speaking of the creative person Rogers (1969, p. 290) states: "One of the elements which pleases me in the theoretical formulation I have given is that this is a creative person. This person at the hypothetical end-point of therapy could well be one of Maslow's 'self-actualizing people.' With his sensitive openness to the world, his trust of his own ability to form new relationships with his environment, he would be the type of person from whom creative products and creative living emerge."

There are also conditions that are necessary for the creative process. The inner conditions of creativity are:

1. Openness to experience

Experiences are not distorted by defensiveness. Of this important construct Rogers (1961, p. 353) remarks: "It means lack of rigidity and permeability of boundaries in concepts, beliefs, perceptions, and hypotheses. It means a tolerance for ambiguity where ambiguity exists. It means the ability to receive much conflicting information without forcing closure upon the situation."
2. Internal locus of evaluation

This construct is regarded as the most fundamental condition for creativity. It is similar to intrinsic motivation in which the individual creates for its own worth not because of predisposed rewards, but because of personal satisfaction.

3. The ability to toy with elements and concepts

Of this condition Rogers places less importance, yet it is nevertheless a condition of creativity. The ability to play with ideas also includes exploration not limited by what may be labeled ridiculous or absurd.

These three inner conditions can not be forced, they must just emerge. The conditions of psychological safety and freedom are also necessary for creativity. Psychological safety includes accepting the individual in terms of unconditional worth. External evaluation must not be present for evaluation is a threat. Empathetic understanding is also necessary for the real self to emerge. Psychological freedom is another component for creativity. This freedom includes freedom to think, to feel, to be. It is from this freedom that openness and the ability to play with concepts occurs. Rogers (1961, p. 31) relates creativity to "man's tendency to actualize himself, to become his potentialities."

Abraham Maslow, another humanistic psychologist, believes all humans have the potential for creativity, and creativity is integrated with self-actualization. Maslow (1968) also makes a distinction between "self-actualizing creativeness" and "special talent creativeness." Self-actualizing creativeness includes spontaneity, expressiveness, less controlled and inhibited behavior, able to express ideas without fear of ridicule, child like, unfrightened by the unknown, the mysterious, less enculturated. In The Farther Reaches of Human Nature, Maslow (1971) discovered, in his work with men,
a fear of what the person would call femininity. This Maslow considers a negative affect in regard to creativity. The verification of female traits in creative males and male traits in creative females is also addressed by authors such as Hammer (1984) and Roe (1976) in which they found a positive relationship between such traits and creative individuals. Of the men Maslow studied he states "If he’s been brought up in a tough environment, ‘feminine’ means practically everything that’s creative: Imagination, fantasy, color, poetry, music, tenderness, languishing, being romantic, in general are walled off as dangerous to one’s picture of one’s own masculinity" (p. 83).

It is also important to note that in Maslow’s theory of creativity, within the creative process there is the experience of a loss of self or a transcendence of self. This is very much like Csikszentmihalyi's (1975) concept of flow, in which among the factors that make up the flow experience, there is also a loss of self.

The behaviorist school of though is exemplifies by B.F. Skinner. One of the most noted behaviorists, Skinner, argues there is no such thing as creativity in Beyond Freedom and Dignity (1971). Since all behavior is based on rewards and punishments, creativity is explained in terms of genetic and environmental history.

The preceding presented a psychological overview of creativity based on three paradigms: psychoanalytic, humanistic, and behavioristic. Another approach to the exploration into creativity is to investigate traits of creative individuals. Figure 2 represents this approach.
<table>
<thead>
<tr>
<th>Trait</th>
<th>Reference</th>
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<tbody>
<tr>
<td>Ability to express ideas without fear of ridicule</td>
<td>Maslow, 1968</td>
</tr>
<tr>
<td></td>
<td>Mooney, 1956</td>
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<tr>
<td>Ability to play with concepts</td>
<td>Rogers, 1961</td>
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<tr>
<td></td>
<td>Patterson, 1985</td>
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<td></td>
<td>Parnes, 1967</td>
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<td>Mooney, 1956</td>
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<td></td>
<td>Gordon, 1961</td>
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<td></td>
<td>Tang, 1986</td>
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<tr>
<td>Adaptation</td>
<td>Rogers, 1961</td>
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<td></td>
<td>Zuckerman, 1976</td>
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<td></td>
<td>Mooney, 1956</td>
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<tr>
<td>Adventurous</td>
<td>Davis, 1986</td>
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<td></td>
<td>Mooney, 1956</td>
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<tr>
<td>Androgyny</td>
<td>Hammer, 1984</td>
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<tr>
<td></td>
<td>Roe, 1976</td>
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<tr>
<td>Attracted to the mysterious</td>
<td>Davis, 1986</td>
</tr>
<tr>
<td>Challenge</td>
<td>Willings, 1987</td>
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<tr>
<td></td>
<td>Moustakas, 1969</td>
</tr>
<tr>
<td>Drive (emotional, mental, and/or physical)</td>
<td>Arnold, 1962</td>
</tr>
<tr>
<td></td>
<td>Hammer, 1984</td>
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<td></td>
<td>Barron, 1969</td>
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<td>Mooney, 1956</td>
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<tr>
<td>Engages in sensation seeking or stimulation activities</td>
<td>Davis, 1983</td>
</tr>
<tr>
<td></td>
<td>Davis, 1986</td>
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<tr>
<td>Flow, peak experience</td>
<td>Csikszentmihalyi, 1975</td>
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<tr>
<td></td>
<td>Parnes, 1967</td>
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<td></td>
<td>Maslow, 1968</td>
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<td></td>
<td>Patterson, 1985</td>
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<tr>
<td>Intrinsic motivation</td>
<td>Amabile, 1983</td>
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<td>Adams, 1986</td>
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<td>Reitz, 1987</td>
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<td>Csikszentmihalyi, 1975</td>
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<td>1990</td>
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<td>Mooney, 1956</td>
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<td></td>
<td>Parnes, 1967</td>
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<tr>
<td>Not afraid of feelings (sex, anger, competition, struggle, hostility)</td>
<td>Barron, 1969</td>
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<tr>
<td></td>
<td>Maslow, 1968</td>
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<td></td>
<td>Hammer, 1984</td>
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<td></td>
<td>May, 1983</td>
</tr>
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<td>Mooney, 1956</td>
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**FIGURE 2**

Traits of Creative Individuals
| OPENNESS TO EXPERIENCE | ROE. 1976  
ROGERS. 1961  
DAVIS. 1986  
MOUSTAKAS. 1969  
SANDERS & SANDERS. 1984  
ROTHENBERG & HAUSMAN. 1976  
REITZ. 1987  
STEIN. 1962  
MOONEY. 1956 |
|----------------------|----------------|
| PLAY                 | PATTERSON. 1985  
STEIN. 1962  
DAVIS. 1986  
AMABILE. 1983  
MICHAELIS. 1980  
SAUNDERS & SANDERS. 1984  
CSIKSZENTMIHÁLYI. 1975, 1990  
BISHOP & JEANRENAUD. 1980  
IVANCEVICH & MATTESON. 1987  
MOONEY. 1956  
KRAUS. 1984  
ROGERS. 1961 |
| PLAYFULL.CHILDLIKE   | MICHAELIS. 1980  
MASLOW. 1968  
DAVIS. 1986  
SANDERS & SANDERS. 1984  
MOONEY. 1956 |
| RISK                 | CAGLE. 1985  
ARNOLD. 1962  
DAVIS. 1986  
ADAMS. 1986  
ROTHENBERG & HAUSMAN. 1976  
MOUSTAKAS. 1969  
MOONEY. 1956 |
| SELF-ACTUALIZATION  | ROGERS. 1961  
MASLOW. 1968  
MOONEY. 1956  
DAVIS. 1986 |
| SPONTANEITY          | ROTHENBERG & HAUSMAN. 1976 |
ANDROGYNY

From research (Hammer, 1984; Roe, 1976) relationships have been established among creativity and androgyny. Bem's (1975) work concluded that individuals who were androgynous are psychologically healthier than those of a conventional sex-type orientation. Androgyny refers to the coexistence of what society considers both masculine and feminine traits within the same individual. This concept differs from sexual orientation which refers to an individual's preference for same gender or other gender in relationships.

According to Sanford (1980) the concept of androgyny appears in myths as the original humans were both male and female. "This idea that the original human being was male and female is found in numerous traditions. For instance, both the Persian and Talmudic mythologies tell how God first made a two sexed being—a male and a female joined together—and then later divided that being into two" (p. 4).

Androgyny exemplifies a unity of the masculine and feminine. This is addressed by Jung in the concept of the anima and the animus. The anima is the female component of the male unconscious and the animus is the male component of the female unconscious. Each person carries elements of both male and female. Jung refers to the process of integration, of wholeness, as "Individuation." "Wholeness of the personality is attained when all the pairs of opposites are differentiated, when the two parts of the total psyche, the conscious and the unconscious, are joined together and stand in a living relation to one another" (Jacobi, 1951, p. 139).
Capra (1983) presents the concept of the polarity of opposites in regard to the male and female sides of human nature. "As with the polarity of good and bad, or life and death, we tend to feel uncomfortable with the male/female polarity in ourselves, and therefore we bring one side or the other into prominence" (p. 132-133). It is Capra's observation that Western society favors the masculine over the feminine and does not acknowledge that humans are a composite of both.

It is the unity, the wholeness and coming together of the opposites that the yin and yang represents. The symbol of the yin and yang from Chinese philosophy also represents the masculine and feminine, earth and heaven, receptive and creative (Judith, 1990). "This symbol (Yin and Yang) represents the dynamic interaction and balance of opposite energies" (Cornell, 1990, p. 93). The yin and yang also represent an integration of opposites to become a whole, such as birth and death, night and day. There is also a spiritual component exemplifying the unity into an integrated whole. Yang is the masculine and yin is the feminine component. "Yang and Yin represent the two spiritual poles along with all life flows. Yang and Yin exist in man and women, but they are also cosmic principles, and their interaction and relationship determine the course of events..." (Sanford, 1980, p. 8).

ENVIRONMENTAL ETHICS

A concise definition of environmental education has been rather illusive. Disinger (1985) proposes "That unanimity of agreement concerning the definition of environmental education has not been reached..." (p. 65). A discussion of the definition of environmental education, according to Ford (1981), concludes that "there
are many acceptable definitions, perhaps the best being a holistic combination of ideas concerned with learning in, about, and for the outdoors." The author continues in discussing the outcomes or expected results. "Each is concerned, ideally with developing skills for lifelong learning, for coping with and contributing to social change, and for the continuous growth of the individual," (p. 49).

Environmental ethics is a component of environmental education. According to the Ohio Department of Education (1985) "An environmental ethic is many faceted and highly complex. It should not be a list of do’s and don’ts but rather a list of realities and relationships that bear directly on a person’s quality of life" (p. 20). Within the document’s discussion on environmental ethics, components are addressed in relation to the influence of institutions (such as schools, family, church, the media, and peers), knowledge, and role models. Each of these components must be taken into consideration when discussing environmental ethics.

A relatively new component of environmental education is the "teaching" of environmental ethics. "Well into the middle of the twentieth century, environmental ethics was simply inconceivable as a subject for philosophy. Its emergence in the 1970s represents the farthest extension of ethical theory in the history of thought" (Nash, 1989, p. 122). Although in both environmental education and environmental ethics diverse schools of thought exist, environmental ethics is generally viewed as all forms of decision making from policy development to educational curriculum development. As with all human decision making processes, individuals bring values and norms into the processes, as are discussed on the following pages.
With the many environmental problems facing the world, from pollution increase to depletion of natural resources, solutions must be considered that understand the individual and their relation to values and beliefs. Much debate is currently concerned with environmental ethics. Many of the same questions that were asked concerning general moral education arise again. Such questions ask: can ethics be taught? If so, whose ethics do we teach? Do we use methods of value clarification in regard to understanding a personal ethic toward the environment?

The issues becomes quite complex. It is proposed that whatever direction the end result takes, a starting point would be to understand the psychological processes involved. From this beginning methodology can be established in verbal and nonverbal communication.

The subject of environmental ethics has been approached by separating people, place, setting, education, and psychological processes. A holistic view is needed in order to consider the interrelatedness of humans acting upon and being acted upon by their environment. Such a view would approach the issues not as separate, but as an active integrated process. This would result in an interdisciplinary approach to understanding environmental ethics in both a formal and nonformal setting.

Environmental ethics addresses different philosophical attitudes toward the environment based upon the ethical questions of decision making. Values are brought into play resulting in problem solving, decision making, and actions which are judged to be right or wrong, good or bad, just or unjust. What is acceptable in one culture is unacceptable in another culture. Wherever the investigation leads, it must be
remembered that values can not be pushed aside. Each individual comes with an accumulation of values from culture and past history that impacts the event. The key is to acknowledge the biases and be open to other's frameworks of reference.

An excellent historical perspective and implications of environmental ethics is presented by Nash (1989). Following the progression within a historical context many schools of thought develop concerning environmental ethics. The concept of environmental ethics pushes against the boundaries of traditional thought, especially the concept that nature has intrinsic value. The implications of this intellectualism relates to change within our political, economic, and social structure.

Nash (1989) elaborates by writing, "The emergence of this idea that the human–nature relationship should be treated as a moral issue conditioned or restrained by ethics is one of the most extraordinary developments in recent intellectual history. Some believe it holds the potential for fundamental and far-reaching change in both thought and behavior comparable to that which the ideal of human rights and justice held at the time of the democratic revolutions in the seventeenth and eighteenth centuries" (p. 4).

The potential for revelational change exists within environmental ethics, but the task of environmental ethics must be clarified. Hargrove (1987) addresses this issue. The task of environmental ethics is "in part, the clarification of values and, in part, the creation of new ethical principles. If this is part of the purpose of environmental ethics, then an understanding of an individual's psychological processing is of utmost importance."
There are also schools of thought that emphasize human's relationship with nature. This is what Barbour (1980) would refer to as unity. An interdependence and unity philosophy with nature is emphasized by authors such as Shepard (1982), Callicott (1985), Harman (1988), and Sheldrake (1991). Another controversial theory is presented by Lovelock (1979) in which he proposes that the earth is a living organism (Gaia theory).

Shepard (1982) relates a position of separation from earth and the lack of realization of earth as a living organism to human's being alienated: "Our fear of helplessness, the perception of the cosmos and even ourselves as nonliving and the threat of a meaningless and disordered world are all familiar complaints of the alienated modern man and, as I have suggested, are all associated with characteristic phases of psychological development" (p. 107).

It is proposed that, in part, Primal people's relation to the environment reflects an integration of the self. It is through an exploration of Primal peoples cosmology that justification for investigation into the concepts related to integration of the self and a positive attitude toward nature are substantiated. Swan (1990) acknowledges our connection to Primal cultures through the collective unconscious. "Each of us is descended from people who worshipped nature, and the symbols, forms, and energies of our ancestors reside somewhere in our personal unconscious as well as our collective unconscious, waiting for us to tap them and awaken human resources to renew our Primal roots of well-being" (p. 175).
The cosmos of Western society differs greatly from that of Primal peoples. Creativity (or creation), the concept of androgyny, the elements of time, harmony, and balance all reflect a different attitude than in traditional Western culture, and nature is not treated as an object for the convenience of humans. "Their (Native peoples) is an animate world in which everything is related to everything else—rocks, trees, animal, insects, humans are intimately connected. For them nature has a different meaning" (Williamson, 1984, p. 301). With the onset of new scientific paradigms such as chaos, quantum, and Gaia theory, scientists consider theories of energy flow within humans, plants, and animals as an interlinking factor. The affect of the conscious and the unconscious in regard to personal and professional development is being utilized by large organizations with consideration of these developments and the search for integration of mind, body, and spirit in regard to a positive attitude toward the environment, and the philosophy of Native and Eastern peoples should be considered and explored. It is a possibility that such philosophies hold a key concept in the integration of self and the role of consciousness.

Native cultures symbolize and live holistically. In such cultures, humans are not separate from nature nor from themselves. Because of the symbiotic participation in the world, Native peoples "discover nature within and outside themselves" (Highwater, 1981, p. 74), and without this sense of wholeness participation can not take place in the "world that lies beyond observation" (p. 77). "Among primal peoples, the natural world is not something alien and wild. It is not an enemy or an outside force that must be subdued and dominated. Nature is the aesthetic perfection
with which we aspire to become identical, harmonious, and bound by immediacy and wholeness" (p. 159).

Eastern and Native cosmology is vastly different from the traditional Western cosmology. With an open mind the curious connections can be seen between the new paradigms of science and such cosmology. The word universe is not applicable in Native culture, for there is not just one, but a multiverse, for there are many different truths (Highwater, 1981).

The organizations that are stressing positive affirmation and the power of the unconscious; the scientific paradigms that give credibility to the flow of energy are similar to the holism concept Primal people hold. In their cosmology everything is connected to everything else. Because of this interconnection, humans and all of nature must remain in harmony and balance. Harmony and balance are the keys to a good life, no illness, and successful crops and hunting. Good things happen, or as Harman (1988) hypothesizes, matter is a function of mind. In the Native American view, "Every adult Indian tends to agree that the basis of success in life is much dependent upon not only one's own efforts, but also the symbiotic relationship with forces that put the individual and the tribe in touch with the 'mighty something'" (Highwater, 1981, p. 82).

The Western world is debating Gaia theory (Lovelock, 1979) in which the earth is considered a living organism. Swan (1990), gives insights on this thesis. "The living-earth thesis is now being supported by atmospheric scientists, biologists, physicists, and chemists, as well as psychologists, philosophers, and shamans. Few
concepts in human history have found such widespread cross-cultural and
cross-disciplinary support" (p. 213).

For the Primal peoples the earth has always been a living entity and much like
themselves. Here again is the concept of interconnectedness and interdependence.
Both the Earth Mother and humans have an axis; for the human it is the backbone
along which lay vibratory centers. It is through these centers that the primordial
sound of life is echoed (Waters, 1963). The Eastern people refer to these as chakras
and also relate an energy system to them. In these energy systems an interconnection
is found. The Earth Mother, the human, and all that exists are connected. It is this
sense of connectedness that is reflected in Primal cultures through the sacred, and this
connectedness reflects an integration of mind, body, and spirit. "Primal people have
little concern or faith in the materialism that imposes mind/brain and soul/body
dichotomies. A body is all there is of us. The Primal process of life is holistic and
formative" (Highwater, 1981, p. 150). Sheldrake (1991) discusses the concept of
energy. "The result is that all nature is thought to consist of fields of energy" (p. 88).
This energy is present in all things. It is implied, much as the Primal concept of soul,
that the soul or vital force could be regarded in terms of energy fields. "In modern
evolutionary physics, the old idea of the soul of the universe has been replaced by the
idea of the primal unified field, from which the known fields of physics arose, and of
which they are aspects. Likewise, the soul of the earth may be best thought of in
terms of the unified fields of Gaia" (p. 158).
The concepts of unity, interconnectedness, wholeness, whether through soul or energy, are represented in Primal cultures through the symbol of the circle. The power of the circle is best explained by Black Elk (Neihardt, 1932, p. 194).

It is a bad way to live, for there can be no power in a square. You have noticed that everything an Indian does is in a circle, and that is because the Power of the World always works in circles, and everything tries to be round. In the old days when we were a strong and happy people, all our power came to us from the sacred hoop of the nation, and so long as the hoop was unbroken, the people flourished. The flowering tree was the living center of the hoop, and the circle of the four quarters nourished it. The east gave peace and light, the south gave warmth, the west gave rain, and the north with its cold and mighty wind gave strength and endurance. This knowledge came to us from the outer world with our religion. Everything the Power of the World does is done in a circle. The sky is round, and I have heard that the earth is round like a ball, and so are all the stars. The wind, in its greatest power, whirls. Birds make their nests in circles, for theirs is the same religion as ours. The sun comes forth and goes down again in a circle. The moon does the same, and both are round. Even the seasons form a great circle in their changing, and always come back again to where they were. The life of a man is a circle from childhood to childhood, and so it is in everything where power moves. Our tepees were round like the nests of birds, and these were always set in a circle, the nation's hoop, a nest of many nests, where the Great Spirit meant for us to hatch our children.

In discussing the importance of the circle, Loomis (1991) states: "First, the Native American perspective views life as a continuous cycle. Life, for them, mirrors the cycling of the seasons, the daily rising of the sun, and the phases of the moon. Life is not seen as linear with a beginning and an end, but viewed as spiraling ever onward in a sunwise, clockwise fashion" (p. 2). The concept of the circle, reflecting wholeness and the human relation to nature, is seen in every aspect of the culture from the architecture to the concept of time. Highwater (1988) states: "Man is part of
nature and reflects the environment in which it evolves" (p. 125). Time is also seen in relation to the circle and is not viewed as linear. For the Primal peoples time is sacred (Highwater, 1988). "These invisible spiritual forms are in turn but manifestations of the one supreme creative power which imbues them with meaning, which moves them in their earthly orbits and seasonal cycles in unison with the constellations of the midnight sky" (Waters, 1963, p. 125). Unity is not only seen in the elements of time, space, and energy but also in the concepts of male and female. Unity is seen in many aspects of Primal culture as male and female, the Mother Earth and the Father Sky. Corn to the Hopi represents the two principles of creation as a sacred entity embodying both elements of male and female (Waters, 1963). Nature then must also hold the elements of both male and female (Sheldrake, 1991). "For if nature is all and everything, it cannot be just female or just male but must include and embrace all polarities" (p. 192). Eastern thought also includes the integration of male and female in nature in the yin and yang (Swan, 1990). "The energy of the earth is yin, pushing upwards, giving nourishment to all things. It is symbolized by the white tiger. The energy of heaven is yang, and it filters downward, inspiring life to action. Its symbol is the azure dragon. Where the azure dragon and the white tiger come together with great force, there is a place of power" (p. 109). This unity of male and female (androgyyny) is a concept also regarded by Jung as an important aspect of individuation and was found to be a component of creative individuals (Hammer, 1984; Roe, 1976).
Creativity or creation is also a union of the opposites, the male and female, the forces of yin and yang. Loomis (1991) discusses Jung’s process of individuation.

"The transcendent function is ‘born of the union of opposites’ (Jung, 1928, par. 368). The conjoining of opposites is ‘a living birth that leads to a new level of being, a new situation’ (Jung, 1958, par. 189)" (p. 21-22).

It is from the concepts of unity that are so prominent in Primal cultures that an integration of the self may have been established. What appears to be an integration of self is reflected in every aspect of Primal culture from the individual to the cosmology. Many links are also found between the image of the male and female (androgyny) to fully functioning, self-actualized, creative individuals. Living with the philosophy of harmony and balance could be what "new" science is addressing as energy flow. This balance could also come forth in the balance of the conscious and unconscious. Could this balance and harmony within and among all that lives be the key concept in the establishment of a more positive environmental attitude, experienced as an integration of the self?

For as Sheldrake (1991, p. 157-158) states:

If Gaia is in some sense animate, then she must have something like a soul, an organizing principle with its own ends or purposes. But we need not assume that the earth is conscious just because she seems to be alive and purposive. She may be conscious, but if so, her consciousness is likely to be unimaginably different from our own, which is inevitably shaped by human culture and language. On the other hand, she may be entirely unconscious. Or she may, like ourselves, be a creature of unconscious habit with some degree of consciousness some of the time. The question has to be left open.
CHAPTER III

PROCEDURES

The factors identified in the preceding chapters have been explored and a rationale presented based on suggestions from literature. There is an indication that an individual’s environmental ethic is related to the factors of creativity, androgyny, and self-actualization.

RESEARCH DESIGN

The purpose of this research is to investigate relationships among the four study variables: creativity, androgyny, self-actualization, and environmental attitude. Four instruments; *How Do You Think, Form E*, (Davis, 1977); *Bem Sex-role Inventory* (BSRI), (Bem, 1981); *Reflections on Self and the Environment* (ROSE), (Buckmaster, 1980); and *Ecological Attitudes and Knowledge Scale* (EAKS), (Maloney, Ward, and Braucht, 1975), were used to measure the study variables. This study is a concurrent correlational study. No generalizations to populations will be made as the sole purpose of this study is to investigate if correlational relationships exist among the variables. To be appropriate, a sample has to embody the full range or the phenomenon under investigation. The study participants were selected because of a greater likelihood of reflecting a wide range of androgyny. The group was therefore
deemed appropriate for this investigation. No generalizations to other populations will be attempted.

Research Questions:

The research questions guiding this study are:

1) Is there a relationship between androgyny and environmental attitude?
2) Is there a relationship between androgyny and creativity?
3) Is there a relationship between androgyny and self-actualization?
4) Is there a relationship between creativity and environmental attitude?
5) Is there a relationship between creativity and self-actualization?
6) Is there a relationship between self-actualization and environmental attitude?

SUBJECT SELECTION

The participants consisted of students enrolled in an alternative public high school in the central Ohio area. The students included freshmen, sophomores, juniors, and seniors; and their age ranged from 14-18. The students participated on a voluntary basis. The science teacher sent out a call for volunteers to participate in this study. Letters explaining the study and permission forms (Appendix E) were sent home with the students. A total of 86 students participated in the study.

A $100 donation was made to the school to be used in their experience fund which is controlled by the students. This is not a finder's fee, but a thank you for the students participation.
INSTRUMENTATION

Four instruments were chosen, *How Do You Think* (HDYT), *Form E* (Davis, 1977) (Appendix A); *Bem Sex Role Inventory* (BSRI) (Bem, 1974) (Appendix C); *Reflections on Self and the Environment* (ROSE) (Buckmaster and Davis, 1985) (Appendix B); and *Ecological Attitudes and Knowledge Scale* (EAKS) (Maloney, Ward, and Braucht, 1975) (Appendix D).

*How Do You Think, Form E*

This instrument was selected to investigate the questions related to creativity. As Davis (1975) states: "The HDYT inventory assesses attitudes, motivations, interest, values, beliefs, and other personality and biographical matters strongly suspected to underlie creative behavior" (p. 78). In this study, traits or characteristics of the individual related to creativity are of interest. *How Do You Think, Form E* defines traits or characteristics of the individual rather than performance in a creative manner. According to the author, Davis (1988), *Form E* is superior to an earlier but similar instrument, *Form B*. *Form E* consists of 100 questions, with questions 37 and 99 of *Form B* having been deleted. The *How Do You Think, Form B* is a 102 item inventory which measures a predisposition to behave creatively. In tests with college students, the Hoyt reliability of the *How Do You Think, Form B* was reported as .94 (n=68) (Davis, 1975). The instrument was shown to exhibit predictive validity through an operational criterion of creativity. The operational criterion was established by a panel of judges who placed values on: 1) art or handicraft project; 2) creative writing; 3) ideas for two inventions; and 4) creative teaching strategy ideas.
Using a Parson product correlation, a validity coefficient correlation of $r = .42$ (p. < .01; n=62) between test scores and creativity ratings was reported by Bartlett and Davis (Davis and Subkoviak, 1974), with an interrater reliability of .78.

The Bem Sex-Role Inventory (BSRI)

This instrument was chosen as a measure of androgyny. According to Bieger (1985, p. 51) "The Bem Sex-Role Inventory (BSRI) is designed to categorize individuals according to their sex-role as a function of the degree to which they identify with an array of gender typed attributes." The self-administered instrument consists of six personality characteristics in the form of a Likert-type scale. The BSRI is different from other masculinity-femininity scales in that it treats the constructs of masculinity and femininity "as independent dimensions rather than two ends of a single dimension, thereby enabling a person to indicate whether she or he is high on both dimensions ('androgynous') low on both dimensions ('undifferentiated'), or high on one dimension but low on the other (either 'feminine' or 'masculine')" (Bem, 1981, p. 4).

The Bem Sex-Role Inventory is the most frequently used measure in sex-role research and has excellent validity and reliability (Lenney, 1991, p. 582). Bieger (1985) reports Pearson product moment correlation coefficients calculated between scores on masculinity, femininity, and difference scores. "The coefficients of reliability ranged from 0.76 (male scores on the short form and the original) to 0.94 (female scores on the original masculinity scale)" (p. 55).
In regard to the internal consistency, the "internal consistency coefficients were computed separately for males and females on the Femininity, Masculinity and Difference scores on both the original and short form of the test. Coefficients of reliability ranged from 0.75 (females on the Femininity Scale of the original BSRI) to 0.90 (males on the Difference score of the short form BSRI) (Bieger, 1985, p. 55).

Reflections of Self and the Environment (ROSE)

The Reflections of Self and the Environment (ROSE) is a measure of self-actualization and consists of 80 items based on the 15 characteristics of self-actualization described by Maslow (1962). The instrument is self-administered and is scored on a five point rating scale. The relationship of the ROSE to self-actualization was tested through correlation with the scores on the Personal orientation inventory, an established instrument to measure self-actualization. The Hoyt reliability is reported by Buckmaster and Davis (1985) as .93 (.90 for males and .94 for females).

A few of the questions that contained gender specific terms were changed. For example, question 23 was changed from "mankind" to "humankind." Question 9 was changed from "the family of man" to "the family of people." It is not felt that such changes affected the meaning of the questions.

Environmental Attitudes and Knowledge Scale (EAK)

The Environmental Attitudes and Knowledge Scale (EAK) is used to assess environmental attitudes and knowledge. The Environmental Attitudes and Knowledge Scale, developed by Maloney, Ward and Braucht (1975), is a 45 item instrument
divided into four subscales: verbal commitment (VC), actual commitment (AC), affect (A), and knowledge (K). The attitudinal scales contain ten items which are scored as True or False. The knowledge scale consists of fifteen items that are rated on a Likert-type scale of five points. The Cronbach's Alpha for the revised form are reported to be 0.805 for VC, 0.888 for AC, and 0.846 for A (Maloney, et. al., 1975). Synodinos (1990) reports the reliability from the Spearman-Brown on the K scale was reported to be 0.84 (Dispoto, 1977). The validity was established by the contrasted-groups approach (Maloney and Ward, 1973; Maloney, et. al., 1975; cf. Synodinos, 1990).

For the purposes of this study only the attitudinal scales were used as the knowledge scale was not a factor considered important to this particular study. This study was not concerned with scores in environmental knowledge, therefore that section, which is not contingent on any other section, was eliminated.

The term "Congressman" was changed to "Congressional Representative" as to eliminate gender specific terms.

CONDITIONS OF TESTING

Students (grade 9 through 12) volunteering to take part in this study were given letters of permission for participation (Appendix E) and permission slips to be signed by their parents or guardians.

The instruments were administered during the regular class periods. The researcher was introduced. The participants were assured that participation was voluntary and grades would not be affected by the students' participation. The
participants were also informed that the results were confidential and would not appear on their school records.

Each group was given all four instruments at the session. Instruments were presented as numbered packets containing one each of the four instruments to ensure confidentiality. For purposes of identification for the participant, in the event an individual would like the results and interpretation of the study, questionnaires were coded with the last four digit of his/her phone number. Both verbal and written instruction were presented. It was emphasized that this was not a test and there were no right or wrong answers, however, every response was important. The students began and ended with whichever of the four instruments they chose. There was no time limit set for completion, however the approximate time of completion of the combined instruments was forty-five minutes. Participants were informed, however, that another scheduled date was to be arranged later to discuss the purpose and results of the research. The results will be discussed with all interested participants, including parents.

DATA ANALYSIS

Each participant was assigned a number and responses were coded in the top left corner of each instrument. Age, gender, and year in school were also recorded. The Davis *How Do You Think Form E* was scored according to the scoring guide with a total of 500 points maximum. Each response, A, B, C, D, and E represented a numerical value; A=1, B=2, C=3, D=4, E=5. Questions 3, 10, 20, 23, 38, 39, 41, 44, 49, 63, 64, 66, 77, 78, and 92 were scored negatively, in the reverse with
A = 5, B = 4, C = 3, D = 2, E = 1. The instrument was hand scored and tallied. The total score was recorded on a master tally sheet.

*Reflections of Self and the Environment (ROSE)*, Buckmaster, was scored in the same manner, according to the scoring guide. Questions 17, 25, 28, 31, 32, 35, 37, 38, 41, 42, 47, 51, 52, 57, 59, 63, 67, 69, 70, 72, and 79 did not reflect characteristics of self-actualized individuals and were therefore scored in reverse with A = 5, B = 4, C = 3, D = 2, E = 1. The remainder of the questions were scored: A = 1, B = 2, C = 3, D = 4, E = 5. The instrument was hand scored and the results tallied and transferred to the master tally sheet.

The Environmental Attitudes and Knowledge (*EAK*) was a true or false instrument. This instrument contained three sections relating to environmental attitude. Each of these sections had ten questions that were responded to with a true or false answer. There were a total of thirty possible points, ten in each section. This instrument was hand scored according to the scoring guide and the results were tallied for each of the three sections and a grand total. The results were then entered in the grand tally sheet.

*The Bem Sex-Role Inventory* consisted of a set of 60 personality characteristics. Responses were on a seven point Likert-type scale. Scoring was performed in accordance with the manual. Each score yielded a standard score for masculinity and femininity, and a standard difference score. The raw scores from both categories were used in relation to a median split in accordance with the manual from the category of Adolescents to classify the individual as male, female, androgynous, or
undifferentiated. The results were tallied with each category having a number code: 1 = androgynous, 2 = male, 3 = female, and 4 = undifferentiated. The categories were then entered on the master tally sheet.

Linear correlations between instruments were investigated by using Pearson product-moment correlation coefficient. Correlation related to the general problem of measuring the degree of association. An ANOVA was used when measures included both discrete and continuous variables. The Scheffe' test and Least Significant Difference (LSD) were used for multiple comparison. The Leven test was used for homogeneity of variance.
CHAPTER IV

RESULTS

This study sought insight into the factors of creativity, self-actualization, androgyne, and environmental attitude. Analysis of data was performed using a SPSS statistical package. A one-way analysis of variance (ANOVA) was used to test the relationship between 1) environmental attitude and androgyne, 2) creativity and androgyne, 3) self-actualization and androgyne. The ANOVA was selected because measures used in this study include both continuous variables (self-actualization, creativity, and environmental attitude) and a discrete variable (androgyne). The Scheffe' was used (as it is cited as being conservative) for pairwise comparisons of means. "It requires larger differences between means for significance than most other methods" (Norusis, 1990, p. 198).

The Pearson product movement correlation coefficient was employed to test the relationship of the variables creativity, self-actualization, and environmental attitude. An analysis of variance (ANOVA) was employed to test the relationship of variables among continuous (creativity, self-actualization, and environmental attitude) and the discrete variable (androgyne).
CHARACTERISTICS OF PARTICIPANTS

There were a total of 86 students who took part in the study. The group consisted of 50 (58.14%) females and 36 (41.86%) males. Of the group 27 were seniors, 17 were juniors, 22 were sophomores, and 19 were freshmen. When the instruments were reviewed 76 were useable; 10 were not useable because they were incomplete.

STATISTICAL ANALYSIS OF DATA

The first four questions were addressed through the context of statistical analysis. The *Environmental Attitude and Knowledge Scale* was composed of three subscales. Each subscale had 10 questions. The subscales were: verbal commitment, actual commitment, and affect. The first row in Table 1 contains the means (M) and standard deviations (SD) of the three subscales from the current study. Table 1 also includes comparison data from other studies. Synodinos (1990) reports results from students enrolled in marketing courses, (Sample 1: "Principles of Marketing;" Sample 2: "Marketing Strategies") and environmental psychology courses (Fall, 1982). The scores (Sierra, College, and Noncollege) are also compared to the findings of Maloney et. al. (1975).
TABLE 1

Comparisons of Means and Standard Deviations of Current Study with Other Studies.

<table>
<thead>
<tr>
<th></th>
<th>VERBALCO</th>
<th>ACTUALCO</th>
<th>AFFECT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Hutchinson (1994)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study Population</td>
<td>76</td>
<td>6.52</td>
<td>2.46</td>
</tr>
<tr>
<td>Synodinos (1990)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample 1</td>
<td>129</td>
<td>4.87</td>
<td>2.30</td>
</tr>
<tr>
<td>Sample 2</td>
<td>32</td>
<td>5.47</td>
<td>2.29</td>
</tr>
<tr>
<td>Env. Psychology Students</td>
<td>37</td>
<td>6.00</td>
<td>2.44</td>
</tr>
<tr>
<td>Maloney, et. al. (1975)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sierra</td>
<td>31</td>
<td>8.68</td>
<td>1.72</td>
</tr>
<tr>
<td>College</td>
<td>56</td>
<td>6.37</td>
<td>2.48</td>
</tr>
<tr>
<td>Noncollege</td>
<td>40</td>
<td>5.02</td>
<td>2.75</td>
</tr>
</tbody>
</table>

Question 1

Is there a relationship between androgyny and environmental attitudes?

In Table 2 the variable "ANDROG" relates to androgyny (which is defined as a high score in the traits of both masculinity and femininity). The variable "MALE" relates to a high score on traits that relate to masculinity and a low score on femininity traits. "FEMALE" relates to a high score on the traits of femininity and a low score on the masculinity traits. "UNDIF" represents the variable of undifferentiated in which a low score was obtained on both the masculinity and femininity traits. The
variable "TOTALATT" represents the total score on the environmental attitude section of the instrument consisting of verbal commitment, actual commitment, and affect.

In Table 2 the results of the Levene test (.3483, p < .790) indicates the data satisfy the assumptions for homogeneity of variables. The results of the one way Analysis of Variance (ANOVA) indicate that a relationship exists between androgyny and environmental attitude (f = 2.77, p < .05).

**TABLE 2**

Results of ANOVA Between Androgyny and Total Environmental Attitude.
The LSD (Least Significant Difference) and the Scheffe' test were both used to test for differences among groups on the measures of androgyny. The LSD test indicates significant difference (p < .05) between the classification of androgyny and female (Table 3). The Scheffe' test, indicated no significant differences among subgroups at the p < .05 level (Table 4).
#### TABLE 3

The LSD Test for Classification of Androgyny and Environmental Attitude.

---

**Variable TOTALATT**

**By Variable ANDROGYN**

*Multiple Range Tests: LSD test with significance level .05*

Harmonic Mean Cell size = 17.2474

The actual range used is the listed RANGE * 1.4714

with the following value(s) for RANGE: 2.82

(*) Indicates significant differences which are shown in the lower triangle

|   | F   | A   |   | E   | U   | N   |   | M   | N   | M   | D   | A   | D   | A   | R   | L I   | L O   |   |   |   | E   | F   | G   |

<table>
<thead>
<tr>
<th>Mean</th>
<th>ANDROGYN</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.5000</td>
<td>FEMALE</td>
</tr>
<tr>
<td>15.1111</td>
<td>UNDIF</td>
</tr>
<tr>
<td>16.5455</td>
<td>MALE</td>
</tr>
<tr>
<td>19.2400</td>
<td>ANDROG</td>
</tr>
</tbody>
</table>

Homogeneous Subsets (highest and lowest means are not significantly different)

**Subset 1**

<table>
<thead>
<tr>
<th>Group</th>
<th>FEMALE</th>
<th>UNDIF</th>
<th>MALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>14.5000</td>
<td>15.1111</td>
<td>16.5455</td>
</tr>
</tbody>
</table>

**Subset 2**

<table>
<thead>
<tr>
<th>Group</th>
<th>UNDIF</th>
<th>MALE</th>
<th>ANDROG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>15.1111</td>
<td>16.5455</td>
<td>19.2400</td>
</tr>
</tbody>
</table>
TABLE 4
Scheffe' Test of Androgyny and Total Environmental Attitude.

<table>
<thead>
<tr>
<th>Subset 1</th>
<th>FEMALE</th>
<th>UNDIFF</th>
<th>MALE</th>
<th>ANDROG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>14.5000</td>
<td>15.1111</td>
<td>16.5455</td>
<td>19.2400</td>
</tr>
</tbody>
</table>

Variable TOTALATT
By Variable ANDROGYN

Multiple Range Tests: Scheffe test with significance level .05
Harmonic Mean Cell size = 17.2474

The actual range used is the listed RANGE * 1.4714
with the following value(s) for RANGE: 4.05

- No two groups are significantly different at the .050 level

Homogeneous Subsets (highest and lowest means are not significantly different)
A Pearson Correlation was performed to examine the relationships among the three subscales of the *Environmental Attitudes and Knowledge Scale* (Table 5).

**TABLE 5**

Correlation of Variables Verbal Commitment, Actual Commitment, and Affect.

<table>
<thead>
<tr>
<th></th>
<th>VERBALCO</th>
<th>ACTUALCO</th>
<th>AFFECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal Commitment</td>
<td>1.000</td>
<td>.4921</td>
<td>.6160</td>
</tr>
<tr>
<td>(76)</td>
<td>(76)</td>
<td>(76)</td>
<td></td>
</tr>
<tr>
<td>p = .000</td>
<td>p = .000</td>
<td>p = .000</td>
<td></td>
</tr>
<tr>
<td>Actual Commitment</td>
<td>.4921</td>
<td>1.0000</td>
<td>.4899</td>
</tr>
<tr>
<td>(76)</td>
<td>(76)</td>
<td>(76)</td>
<td></td>
</tr>
<tr>
<td>p = .000</td>
<td>p = .000</td>
<td>p = .000</td>
<td></td>
</tr>
<tr>
<td>Affect</td>
<td>.6160</td>
<td>.4899</td>
<td>1.0000</td>
</tr>
<tr>
<td>(76)</td>
<td>(76)</td>
<td>(76)</td>
<td></td>
</tr>
<tr>
<td>p = .002</td>
<td>p = .000</td>
<td>p = .</td>
<td></td>
</tr>
</tbody>
</table>

Significant correlations were found among verbal commitment and actual commitment, verbal commitment and affect and actual commitment and affect. A correlation coefficient of .4921 (p< .05) was found between verbal commitment and actual commitment. A correlation of r=.6160 (p< .05) was found between verbal commitment and affect. Actual commitment and affect indicate a correlation of r=.4899 (p< .05). All three coefficients are moderate to strong.
Question 2

Is there a relationship between androgyny and creativity?

An ANOVA was used to determine if such a relationship exists. As shown in Table 6 there is a significant relationship (p < .05) between creativity and androgyny. The Levene test indicates that the data satisfies the assumptions for homogeneity of variance.

### TABLE 6

Results of ANOVA with Variables Creativity and Androgyny.

<table>
<thead>
<tr>
<th>Source</th>
<th>D.F.</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F</th>
<th>F Ratio</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3</td>
<td>30279.0357</td>
<td>10093.0119</td>
<td>8.0836</td>
<td>.0001</td>
<td></td>
</tr>
<tr>
<td>Within Groups</td>
<td>72</td>
<td>89897.3196</td>
<td>1268.5739</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>120176.3553</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group</th>
<th>Count</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>Minimum</th>
<th>Maximum</th>
<th>95% Pct Conf Int for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANDROG</td>
<td>25</td>
<td>349.8400</td>
<td>30.7255</td>
<td>6.1451</td>
<td>294.0000</td>
<td>402.0000</td>
<td>337.1571 TO 362.5229</td>
</tr>
<tr>
<td>MALE</td>
<td>11</td>
<td>356.2727</td>
<td>24.9363</td>
<td>7.5186</td>
<td>303.0000</td>
<td>385.0000</td>
<td>339.5203 TO 373.0251</td>
</tr>
<tr>
<td>FEMALE</td>
<td>22</td>
<td>316.0000</td>
<td>41.9331</td>
<td>8.9402</td>
<td>251.0000</td>
<td>438.0000</td>
<td>297.4079 TO 334.5921</td>
</tr>
<tr>
<td>UNDIFF</td>
<td>18</td>
<td>308.1111</td>
<td>37.6484</td>
<td>8.8738</td>
<td>237.0000</td>
<td>389.0000</td>
<td>289.3890 TO 326.8332</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>331.0921</td>
<td>40.0294</td>
<td>4.5917</td>
<td>237.0000</td>
<td>438.0000</td>
<td>321.9450 TO 340.2392</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>F</th>
<th>F Ratio</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Effects</td>
<td>35.3352</td>
<td>4.0532</td>
<td></td>
</tr>
<tr>
<td>Random Effects</td>
<td>12.0387</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Random Effects Model - estimate of between component variance = 477.6

Levene Test for Homogeneity of Variances

<table>
<thead>
<tr>
<th>Statistic</th>
<th>df1</th>
<th>df2</th>
<th>2-tail Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.7659</td>
<td>3</td>
<td>72</td>
<td>.517</td>
</tr>
</tbody>
</table>
The LSD test and Scheffe' tests were used to test the differences in creativity among the category with androgyny subscales. The LSD indicates significant differences in creativity between classifications of undifferentiated and androgyny, male and undifferentiated, female and androgyny, and female and male (Table 7).

**TABLE 7**

The LSD Test of Differences on the Variables of Creativity and Androgyny.

```
<table>
<thead>
<tr>
<th>Variable</th>
<th>CREATIV1</th>
<th>By Variable</th>
<th>ANDROGYN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Multiple Range Tests: LSD test with significance level .05
Harmonic Mean Cell size = 17.2474

The actual range used is the listed RANGE * 8.5084
with the following value(s) for RANGE: 2.82

(*) Indicates significant differences which are shown in the lower triangle

```

<table>
<thead>
<tr>
<th>Mean</th>
<th>ANDROGYN</th>
</tr>
</thead>
<tbody>
<tr>
<td>308.1111</td>
<td>UNDIF</td>
</tr>
<tr>
<td>316.0000</td>
<td>FEMALE</td>
</tr>
<tr>
<td>349.8400</td>
<td>ANDROG</td>
</tr>
<tr>
<td>356.2727</td>
<td>MALE</td>
</tr>
</tbody>
</table>

Homogeneous Subsets (highest and lowest means are not significantly different)

Subset 1

<table>
<thead>
<tr>
<th>Group</th>
<th>UNDIF</th>
<th>FEMALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>308.1111</td>
<td>316.0000</td>
</tr>
</tbody>
</table>

Subset 2

<table>
<thead>
<tr>
<th>Group</th>
<th>ANDROG</th>
<th>MALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>349.8400</td>
<td>356.2727</td>
</tr>
</tbody>
</table>
```
The Scheffe' test agreed with the LSD, except that a significant difference was not found between the categories of female and androgyny (Table 8).

**TABLE 8**

Scheffe' Test of Androgyny and Creativity.

---

<table>
<thead>
<tr>
<th>Variable</th>
<th>CREATIVI</th>
<th>By Variable</th>
<th>ANDROGN</th>
</tr>
</thead>
</table>

Multiple Range Tests: Scheffe test with significance level .05

Harmonic Mean Cell size = 17.2474

The actual range used is the listed RANGE * 8.5084

with the following value(s) for RANGE: 4.05

(*) Indicates significant differences which are shown in the lower triangle

<table>
<thead>
<tr>
<th></th>
<th>F A</th>
<th>U E N</th>
<th>N H D M</th>
<th>D A R A</th>
<th>I L O L</th>
<th>F E G E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>ANDROGN</td>
<td>308.1111</td>
<td>UNDIF</td>
<td>316.0000</td>
<td>FEMALE</td>
<td>349.8400</td>
</tr>
</tbody>
</table>

Homogeneous Subsets (highest and lowest means are not significantly different)

Subset 1

<table>
<thead>
<tr>
<th>Group</th>
<th>UNDIF</th>
<th>FEMALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>308.1111</td>
<td>316.0000</td>
</tr>
</tbody>
</table>

Subset 2

<table>
<thead>
<tr>
<th>Group</th>
<th>FEMALE</th>
<th>ANDROG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>316.0000</td>
<td>349.8400</td>
</tr>
</tbody>
</table>

Subset 3

<table>
<thead>
<tr>
<th>Group</th>
<th>ANDROG</th>
<th>MALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>349.8400</td>
<td>356.2727</td>
</tr>
</tbody>
</table>
Question 3

Is there a relationship between androgyny and self-actualization?

Table 9 presents the results of an ANOVA with the variables self-actualization and androgyny. An ANOVA indicates a significant difference among group means. A higher score on the Reflections of Self and the Environment (ROSE) self-actualization is associated with the variable of androgyny. The Lavene test indicates homogeneity of variance.

**TABLE 9**

Results of ANOVA with Variables Self-Actualization and Androgyny.
The Scheffe' and LSD reveal significant differences at the p < .05 level. The LSD, Table 10, indicates significant differences in self-actualization between the classifications of undifferentiated and male, androgyny and undifferentiated, and androgyny and female.

**TABLE 10**

The LSD Test for Classification of Androgyny and Self-actualization.

<table>
<thead>
<tr>
<th>Variable</th>
<th>SELFACTU</th>
<th>By Variable</th>
<th>ANDROGYN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Multiple Range Tests: LSD test with significance level .05
Harmonic Mean Cell size = 17.2474

The actual range used in the listed RANGE = 7.3926
with the following value(s) for RANGE: 2.82

(*) Indicates significant differences which are shown in the lower triangle

```
  F  A
 U E N
 W   H   D
 H A A R
 I L L O
 F E E G
```

**Mean** | **ANDROGYN**
---|---
271.9444 | UNDIFF
277.8182 | FEMALE
297.7273 | MALE *
310.0400 | ANDROG **

Homogeneous Subsets (highest and lowest means are not significantly different)

**Subset 1**
Group | UNDIFF  | FEMALE
Mean  | 271.9444 | 277.8182

**Subset 2**
Group | FEMALE  | MALE
Mean  | 277.8182 | 297.7273

**Subset 3**
Group | MALE  | ANDROG
Mean  | 297.7273 | 310.0400
In Table 11, the Scheffe' test indicates significant differences in self-actualization between the classification of androgyne and undifferentiated and androgyne and female.

**TABLE 11**

Scheffe' Test of Self-actualization and Androgyny

<table>
<thead>
<tr>
<th>Variable</th>
<th>SELFACTU</th>
<th>By Variable</th>
<th>ANDROSYN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ONE WAY</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Multiple Range Tests: Scheffe test with significance level .05

Harmonic Mean Cell size = 17.2474

The actual range used is the listed RANGE * 7.3926
with the following value(s) for RANGE: 4.05

(*) Indicates significant differences which are shown in the lower triangle

| F | A | U | E | N | M | M | D | D | A | A | R | I | L | L | O | F | E | E | G |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

<table>
<thead>
<tr>
<th>Mean</th>
<th>ANDROGYN</th>
</tr>
</thead>
<tbody>
<tr>
<td>271.9444</td>
<td>UNDIF</td>
</tr>
<tr>
<td>277.8182</td>
<td>FEMALE</td>
</tr>
<tr>
<td>297.7273</td>
<td>MALE</td>
</tr>
<tr>
<td>310.0400</td>
<td>ANDROG</td>
</tr>
</tbody>
</table>

Homogeneous Subsets (highest and lowest means are not significantly different)

**Subset 1**

<table>
<thead>
<tr>
<th>Group</th>
<th>UNDIF</th>
<th>FEMALE</th>
<th>MALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>271.9444</td>
<td>277.8182</td>
<td>297.7273</td>
</tr>
</tbody>
</table>

**Subset 2**

<table>
<thead>
<tr>
<th>Group</th>
<th>MALE</th>
<th>ANDROG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>297.7273</td>
<td>310.0400</td>
</tr>
</tbody>
</table>
Question 4

Is there a relationship among self-actualization, creativity, and environmental attitude?

Table 12 contains the means and standard deviations for the variables of creativity (CREATIVI), self-actualization (SELFACTU), and total scores on the Environmental Attitude and Knowledge Scale (TOTALATT).

TABLE 12

Means and Standard Deviations of Creativity, Self-actualization, and Total Environmental Attitude.

<table>
<thead>
<tr>
<th>Correlate Selected Raw Scores</th>
<th>Cases</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity</td>
<td>76</td>
<td>331.0921</td>
<td>40.0294</td>
</tr>
<tr>
<td>Self-Actuality</td>
<td>76</td>
<td>289.9079</td>
<td>34.1944</td>
</tr>
<tr>
<td>Total Environmental Attitude</td>
<td>76</td>
<td>16.5000</td>
<td>6.3235</td>
</tr>
</tbody>
</table>

Pearson Correlation Coefficients were computed to answer question four as presented in Table 13. Statistically significant correlations were found among all variables: creativity (CREATIVI) and self-actualization (SELFACTU), $r = .6236$; the total scores of the environmental attitude scale (TOTALATT) and self-actualization (SELFACTU), $r = .4336$; and creativity (CREATIVI) and the total scores of the environmental attitude scale (TOTALATT), $r = .3513$. 
TABLE 13
Correlation of Creativity, Self-actualization, and Total Environmental Attitude.

<table>
<thead>
<tr>
<th></th>
<th>Creativity</th>
<th>Self-actualization</th>
<th>Total Environmental Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative</td>
<td>1.000</td>
<td>.6236</td>
<td>.3513</td>
</tr>
<tr>
<td></td>
<td>(76)</td>
<td>(76)</td>
<td>(76)</td>
</tr>
<tr>
<td></td>
<td>p = .000</td>
<td>p = .002</td>
<td></td>
</tr>
<tr>
<td>Self-actualization</td>
<td>.6236</td>
<td>1.0000</td>
<td>.4336</td>
</tr>
<tr>
<td></td>
<td>(76)</td>
<td>(76)</td>
<td>(76)</td>
</tr>
<tr>
<td></td>
<td>p = .000</td>
<td>p = .000</td>
<td>p = .000</td>
</tr>
<tr>
<td>Total Environmental Attitude</td>
<td>.3513</td>
<td>.4336</td>
<td>1.0000</td>
</tr>
<tr>
<td></td>
<td>(76)</td>
<td>(76)</td>
<td>(76)</td>
</tr>
<tr>
<td></td>
<td>p = .002</td>
<td>p = .000</td>
<td>p = .000</td>
</tr>
</tbody>
</table>
CHAPTER V
DISCUSSION

RESTATEMENT OF THE STUDY

Chapter One presented the self as an integral part of a human's relation to the environment. From the self and spiritual aspects humans try to find purpose and place in the world. The value system one uses is closely linked to the culture, self, and spiritual understanding. Underlying education, human action and thought, research, and individual behavior is one's value system. This value system may either be acknowledged or not. Mind, body and spirit have been separated in traditional Western culture. The variables of androgyny, self-actualization, creativity, and environmental attitude were explored as indicators of wholeness. Two purposes guide this study. The first purpose is to investigate if a relationship does exist among these variables. The second purpose is to develop through literature review and based on current data, theoretical constructs regarding integration of the self to environmental attitudes.

Chapter Two presents a literature review addressing the variables of androgyny, self-actualization, creativity, and environmental attitudes. Also presented was literature regarding the concept of self, Western culture's promotion of a mind, body dualism and theoretical implications of current scientific theory such as Gaia, quantum and chaos theories.
A case was made showing the theoretical relationships among androgyny, self-actualization, creativity, and environmental attitude. As pointed out in Chapter Two, methods utilizing more holistic approaches are being advocated by industry and science (see Chapter Two). This new view of wholeness has implications for not only education, but science and industry as the interconnectedness of humans and the natural world becomes more apparent and begins to be substantiated by scientific theory.

Literature reviewed in Chapter Two suggested that much is to be learned from Primal and Eastern cultures where the integration of mind, body and spirit is advocated. Recognition of the connectedness of humans with the environment and promotion for the respect of all that exists within the universe is also present in such cultural philosophy. A call is made to move away from an inanimate to an animate worldview.

Chapter Three presents the design for the study. A concurrent correlation design was used. The participants of the study were enrolled in an alternative high school in the central Ohio area and consisted of 86 students. The instruments of choice were the How Do You Think Form E (Davis, 1977), Bem Sex-role Inventory (Bem, 1981), Reflections of Self and Environment (ROSE) (Buckmaster, 1980) and Ecological Attitudes and Knowledge Scale (EAKS) (Maloney, Ward and Braucht, 1975).
Chapter Four presents empirical findings on the variables of androgyny, self-actualization, creativity, and environmental attitude. The need for a more comprehensive instrument to measure environmental attitudes was discussed.

Relationships were found among the variables. Since such relationships were found to exist, the investigation proceeded to the theoretical implications of these relationships in regard to integration of mind, body and spirit as a construct of wholeness. Implications would be explored in regard to human’s relationship with nature.

Chapter Five, which follows, provides a discussion around the two stated purposes of this study and presents a concise set of conclusions with an expanded discussion of the implications. The study report concludes with a set of recommendations.

DISCUSSION

Question 1 Is there a relationship between androgyny and environmental attitudes?

The first question dealt with the variables of androgyny and environmental attitudes. The term "androgynous" indicates scores that are high in both categories of masculine and feminine characteristics. The results of an ANOVA indicate a relationship between androgyny and environmental attitude (r=2.77, p < .05). The blend of masculine and feminine is an important concept in the search for holism. It is also an intricate part of the unity paradigm in relation to nature. From these results
it could be suggested that androgynous individuals hold an attitude toward the environment that reflects the traits of masculine and feminine and is expressed in an attitude of unity. This assumption warrants further investigation as the instrument utilized in this study to measure environmental attitudes was found to be problematic. The broad scope of the individual’s environmental attitude was not measured as the instrument’s focus centered on issues pertaining to pollution.

The results of those scoring on the *Bern Sex-role Inventory* (1981) as cross-sexed also warrants further investigation. The term "cross-sex" refers to males that scored high in the feminine categories and low in the masculine categories, and females that scored high in the masculine categories and low in the feminine categories. This question was suggested based on previous research by Borden and Powell (1983) who found the a relationship between the variables of androgyny and environmental attitude. The Borden and Powell study reported that total scores on the EAK "indicated that undifferentiated and traditionally sex-typed subjects exhibited similar but significantly lower overall scores than did cross-sexed and androgynous subjects" (p. 266). In regard to androgynous and cross-sexed subjects the authors state, "In general, then, these two measures indicate that androgynous and cross-sex typed subjects share a high level of positive regard toward environmental problems" (p. 266)

In the study reported herein, individuals who scored as cross-sex type according to the Bem Sex Role Inventory, were not found to have equal scores on
environmental attitude as compared to those who scored androgynous. Table 14 compares the means and standard deviations of the groups.

**TABLE 14**

Comparisons of Means and Standard Deviations of Androgynous and Cross-sex Participants

<table>
<thead>
<tr>
<th>Cases</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Androgynous</td>
<td>25</td>
<td>19.2400</td>
</tr>
<tr>
<td>Cross-sex</td>
<td>24</td>
<td>15.2917</td>
</tr>
</tbody>
</table>

It is interesting to note that as a group, the population involved in the current research exhibits higher mean scores than those involved in marketing courses from Synodinos' study. Scores were comparable to those enrolled in the environmental psychology course and college from previous work by Maloney et. al. (1975) (see Table 1, p.66).

The participants in this study could be a select group that overall is more attuned to environmental issues, which is likely given the nature of the school. The subjects could be more sensitive to environmental issues either through the school philosophy or because within the last ten years there has been a greater awareness and focus on environmental issues. Environmental issues are not only presented in schools, but also through the media. There are subtle environmental messages presented in advertising, movies, and television. As a whole, the general population is becoming more environmentally aware.
Although results from previous research and this research indicate a relationship exists between the variables of environmental attitude and androgyny, an instrument with a wider focus of environmental issues is necessitated. The instrument of use (EAK) in all three categories (verbal commitment, actual commitment, and affect) focused primarily on those issues concerned with pollution, which was the focus of environmental studies in the 1970s. There are many other issues which need to be addressed concerning the environment along with the issues of pollution. Such issues as wildlife management diversity, sacred spaces, forest management, animal rights, genetic engineering, conservation and depletion of the rain forest are a few.

Another concern is that there are no filler questions on the instrument (EAK) thereby allowing the participants to be fully aware of the issues under investigation. This knowledge could affect the outcome of the scores. Some individuals, rather than answering the questions honestly, may have responded with what is anticipated as the correct answer. The reverse of this concept must also be considered. It is possible some participants could answer in reverse knowing the subject of investigation. It is therefore recommended that an instrument not only with filler questions, but also with a wider variety of environmental issues be developed.

**Question 2** Is there a relationship between androgyny and creativity?

The second question asked if a relationship exists between androgyny and creativity. Participants who possess the trait of androgyny were found to also score high on the test of creativity, *How Do You Think, Form E* (Davis, 1977). This supports previous work by Hammer (1984) and Roe (1976). The relationship also
suggests an integration of the self. Hammer (1984) elaborates on the creative individuals who participated in his research. The findings suggest "...a fusion of feminine and masculine components in these subjects..." (p. 80). In further discussion the author elaborates:

Alongside these feminine feelings, however, we recall the high degree of strength and masculinity, of confidence and determination, of ambition and power. It is apparently in this fusion of the feminine with the masculine that part of the gift of these creative individuals lies. It is this fusion which allows the necessary sensitivity and intuitiveness, on the one hand, to combine with the purposive action and determination, on the other hand, to result in the masculine-feminine blend necessary for creative artistry. (Hammer, 1984, p. 80)

Using a battery of tests, Welsh (1975) found a significant relationship between males who possessed a strong feminine component and creativity. (For a complete discussion see: G.S. Welsh, Creativity and Intelligence: A Personality Approach.)

The issue of androgyny, the unity of the masculine and feminine, appears to relate to the creative process as a fusion of traits.

**Question 3** Is there a relationship between androgyny and self-actualization?

Question three addresses relationships between androgyny and self actualization. The results indicate a significant correlation. Individuals who recognize both components of themselves, the feminine and the masculine are more complete, allowing the integration of the psyche. It would follow, with self-actualization representative of wholeness, that the two factors (self-actualization and androgyny) would be related. By suppressing either side, the individual does not function in
totality. Self-actualization could also imply individuation, Jung's concept of wholeness.

Swan (1990) relates self-actualization to having a zest for life and learning. The author further relates environmental values as arising from emotional experiences. Another characteristic of self-actualized individuals is that they are not dependent on extrinsic satisfaction. Such individuals also experience the mystic or peak experience (see pg. 30-34, Chapter Two).

According to Swan (1990), environmental values are established from emotional experiences. Emotional experiences are related to intrinsic not extrinsic rewards. The impact of such experiences could be in part due to the unity with the outer and inner worlds that arise during the peak or flow experience.

**Question 4** Are there relationships among self-actualization, creativity, and environmental attitude?

Question four investigates the relationships among the variables of self-actualization, creativity, and total score of environmental attitude. A positive relationship was also found among these variables. It is suggested that a relationship among these factors is based on an integration of self; a factor of wholeness.

Creative people, as defined by Jungian theory, are able to utilize the collective unconscious, drawing upon symbols, myth, and archetypes. If the premise of those who relate quantum theory to the interconnectedness of all stands correct, creative, androgynous, self-actualized individuals are able to utilize the energy that connects all. It is also hypothesized that traits of self-actualization relate to this use of unity--a
sense of identification, sympathy and affection for other humans. The unity goes beyond humans in regard to self-actualization as Moustakas expresses. "It is this experience of expressing and actualizing one's individual identity in an integrated form in communication with one's self, with nature and with other persons that I call creative" (cf. Davis, 1986, p. 4).

From an eco-feminist view, nature, being female, would be subject to conquest and control. Individuals who are androgynous would therefore, have less tendency to express and act on the premise that nature, like women, is something to be conquered and controlled. Androgynous individuals would be more apt to recognize themselves as part of nature, not fearing the female aspect, but possessing both components.

THEORETICAL IMPLICATIONS

As presented in Chapter Four, a relationship among self-actualization, androgyny, creativity, and environmental attitude exists. It is from these variables that the importance of holism and a holistic approach to the environment is presented. The construct of unity or an integration of self is presented in relation to each of the variables.

Two research questions, Question 5 and Question 6 address theory. These questions are as follows:

*Question 5* Is there a relationship among androgyny, self-actualization, creativity, and environmental ethics?

*Question 6* Is there a relationship between integration of the self and environmental attitude?
**Self-actualization**

The primary component related to this research reflects on the unity of the self. This unity is present in self-actualized individuals through peak experiences, which individuals experience as a wholeness of self. This is a unity of the inner self, a unity of the inner and outer worlds, and a sense of unity of self with the outer world as well.

**Androgyny**

The second component is the concept of androgyny. Both traits of masculine and feminine become prominent. An acceptance of the feminine components that are expressed through cultural myths may also occur.

If the eco-feminists are correct in their assumption that nature, like women is subject to conquest and control, the variable of androgyny would indicate individuals who accept the feminine and masculine components at an integrated level. The male component brings into the integration positive traits that are related to strength of purpose and a sense of understanding of boundaries. Such an androgynous individual would not only have an identity with such traits, but would have progressed to a level of acceptance of nature. This acceptance of both the feminine and masculine traits and the acceptance of nature would alleviate the need to subdue and conquer nature, thereby developing a relation with nature of acceptance and nurturing.
Creativity

The third variable, creativity, has long been associated with self-actualization (Rogers, 1961; Maslow 1968), androgyny (Hammer, 1984; Roe, 1976). Creativity has also been related to other factors such as flow, peak experiences, intrinsic motivation, play, openness, and childlike qualities (see Figure 1). Creativity, however, had not been directly related to a positive environmental attitude. A low to moderate correlation was found among creativity and environmental attitude in this study ($r = .3513, p < .05$).

It is interesting to note that in most studies, creative individuals are primarily of the intuitive typology. From this base, further investigation into Jungian typology is recommended.

The Myers Briggs Type Indicator (MBTI) is based upon the theory of Carl Jung (1923). Behavior is due to differences in perception and judgement. The purpose "of the Myers Briggs Type Indicator is to identify, from self-report of easily recognized reactions, the basic preferences of people in regard to perception and judgement, so that the effects of each preference, singly and in combination, can be established by research and put to practical use" (Myers and McCaulley, 1985, p. 1).

There are four preferences. They are: EI (Extraversion, Introversion); SN (Sensing, Intuitive); TF (Thinking, Feeling); JP (Judgment, Perception). The first preference Extraversion or Introversion indicates the orientation to the outer world of people and objects (Extraversion) or to the inner world of concepts and ideas (Introversion). SN indicates two opposite ways of perceiving. Sensing relies on the
five senses whereas Intuition relates to the process of intuition, arising from the unconscious. Thinking and Feeling are ways of judgement. Thinking relies on facts and logic. Feeling uses social and personal values as a basis for judgement.

Judgment and Perception relates to the outer world and the individual's way of dealing with it. "A person who prefers judgement (J) has reported a preference for using a judgement process (either thinking or feeling) for dealing with the outer world. A person who prefers perception (P) has reported a preference for using a perceptive process (either S or N) for dealing with the outer world" (Myers and McCaulley, 1985, p. 2).

Myers and McCaulley (1985) indicate that type differences influence interest, aptitude, and application. Drawing upon previous research conducted at the Institute for Personality Assessment and Research, Myers and McCaulley (1988) compiled the samples in relation to typology. The samples included: creative architects (A), mathematicians (M), research scientists (S), and writers (W). It is interesting to note the commonality in regard to type. The majority in this study are intuitive, while other studies note a relationship with creativity and perception (Myers and McCaulley, 1985). The authors reviewed studies regarding typology and creativity. The review indicates: "Creativity therefore, is expected to be associated primarily with a preference for intuition, and secondarily with a preference for the perceptive attitude which gives curiosity and receptiveness" (p. 214). A profile begins to emerge as the authors continue in a discussion of extroversion and introversion. Most samples of creative individuals prefer introversion although extroversion is related to those in
performance. Feeling types are found primarily in the arts and preference for thinking in math and science.

Integration of the Self

The search for wholeness or an integration of the self is addressed by many prominent psychologists, for example Jung (1959), Rogers (1961) and Maslow (1970). As the integration takes place certain changes also occur. Among Jung’s concept of individuation is the acknowledgement of archetypes, symbol, and myth (Jacobi, 1951). Another aspect of the integration of self is regarded as the integration of the two sides of the brain functioning together to create a new kind of energy. Kleiner (1986) recognizes the functioning of the two sides of the brain each with specialized functions, but it has been discovered that in certain activities, such as creative science, both sides of the brain are involved. "It has been noted that with the development of the individual toward fuller functioning, the EEG, or brain wave patterns, become more symmetrical, showing the same pattern on both sides. This integrated state is not simply a balance or alteration between two separate functions; it is not 'half-one, half the other' or 'first one, then the other'. It is rather the mergence of a new kind of energy, a new principle, symbolized by the 'center' that is a generating force in itself" (p. 66).

Csikszentmihalyi, (1975) alludes to a similar fusion within the concept of flow which is described as "a holistic sensation that people have when they are acting with total involvement" (p. 36). Among the experiences of flow are a sense of harmony
and unity with the surroundings, a sense of loss of time, and a feeling of competence and a sense of being in control (p. 182).

The sense of unity, of balance, is related to the individual through Jung’s concept of Individuation.

Jung makes it clear that his concept of the self is not that of a kind of universal consciousness, which is really only another name for the unconscious. It consists rather in the awareness on the one hand of our unique natures, and on the other of our intimate relationship with all life, not only human, but animal and plant, and even that of inorganic matter and the cosmos itself. It brings a feeling of ‘oneness’, and of reconciliation with life, which can now be accepted as it is, not as it ought to be. (Fordham, 1953, p. 63)

It can also be noted that Maslow (1968) regards a peak experience as a characteristic of those who are self-actualized. Within these experiences the person feels more integrated. The peak experience brings about a sense of wholeness within oneself and a unity without as a transcending of the ego.

As he gets to be more purely and singly himself he is more able to fuse with the world, with what was formerly not-self, e.g., the lovers come closer to forming a unit rather than two people, the I-Thou monism becomes more possible, the creator becomes one with his work being created, the mother feels one with her child, the appreciator becomes the music (and it becomes him) or the painting, or the dance, the astronomer is ‘out there’ with the stars (rather than a separateness peering across an abyss at another separateness through a telescopic-keyhole). That is, the greatest attainment of identity, autonomy, or self-hood is itself simultaneously a transcending of itself, a going beyond and above selfhood. The person can then become relatively egoless. (Maslow, 1968, p. 105)
Androgyny: The unity of masculine and feminine

The theme of unity and balance also relates to fusion of masculine and feminine. This is evident in Native American culture as Loomis (1991) states: "In the native American tradition, the source of all creation is the Sacred Mystery, the Great Spirit. The Great Spirit is not the patriarchal God of the Judeo-Christian-Muslim tradition but a creative-conceptive force combining feminine and masculine potentials in harmonious balance" (p. 1).

The components of the masculine and feminine are regarded as an energy flow with the unity of the two comprising the whole. It is from this premise of regard for the unity of masculine and feminine principles that the factor of androgyny is approached. If, in fact, the unity of the two is regarded as an important component indicating wholeness, then it would follow that individuals who are androgynous also are nearer wholeness. This integration of the male and female components could be regarded as having a fusion of the opposites. This fusion may reflect the "new energy" referred to by Kleiner (1986). This energy also relates to nature--to a concept of wholeness--which is accepted by Primal peoples. It is in regard to wholeness that the concepts of harmony and balance must also be addressed.

Mother Earth is as universal a symbol as our race possesses, at home even in those societies that have moved on to more civilized ways. But at that point in her long history, as she leaves the land to enter the city, a significant change takes place. Her further adventures proceed along two contrasting, often conflicting routes, one religious, the other philosophical and eventually scientific. This bifurcation mirrors a deep psychological split that segregates emotion from intellect. And as we will see, this dichotomy also corresponds to the masculine and feminine stereotypes that divide every culture. (Rosak, 1992, p. 138)
The question of the integration of the anima and animus as presented by Jung could also be an indication that the self has become whole. This indication may be evident by individuals who possess the trait of androgyny.

CONCLUSION AND RECOMMENDATIONS

The results of this research indicate a relationship among the variables of androgyny, creativity, self-actualization, and environmental attitude. There are implications regarding the integration of the self. Perhaps the integrations of the self has not only spiritual implications but scientific implications that will change humans relations with each other and the natural environment. If, in fact, humans are closely linked to nature and actions or mere presence do effect the Universe, our approach to science, technology, and education would be changed dramatically. We function within a material world leaving the matters of the spirit, heart, and mind to the theologians and philosophers. The blending of science, religion, and philosophy that was long ago accepted may be turning full circle as we search for meaning and purpose in our lives. Primal and Eastern cultures recognize a unity and interdependence within the natural world. This is reflected in person and culture as an important part of the spiritual life as a continuing quest for meaning and wholeness.

Primarily Western culture is quick to discard issues that pertain to the spiritual side of humans and nature. Such discussions, while at times tolerated, are usually disregarded within the scientific community. These discussions also involve the unexplained, matters of the intuition, consciousness, energy flow, and alternative realities.
It appears ironic that while humans seek a purpose and meaning in their lives, so little attention is given to such issues in science. The tide however is changing as prominent theoretical physicists such as Wolf (1991) confront the issues that once were rejected within the scientific community. A primary issue of concern relates to the unity of humans with nature. As we humans have historically seen ourselves as above and apart from the natural world, we have assumed we were thereby given the right to control and use the environment at our discretion. In this view Mother Earth is not sacred or living, but is treated as an inanimate object for the use and comfort of humans. The theory proposed by Wolf regards quantum theory as a basis for the explanation of many of the happenings common in Primal cultures that contrast with this assumption. The basic premise for the theory relates to the connectedness of all that exists.

Wolf (1991) addresses such topics as Shamans who "see themselves a part of the great universe-mother" (p. 28) with their powers coming from the earth itself. He proposes nine hypotheses relating shamanism to quantum physics. For the purposes of this research his discussion of male and female energy is significant. "The feminine energy is harmonious, wavelike in action, vibrational, and reverberatory. The male energy is pointed, particle-like, thrusting, forceful, direct, and at the moment. The female is eternal. The male is at the instant" (p. 123). The significance resides in the premise of a vibratory universe in which all is connected. The male and female represent dual energies that must function together to become whole. The symbol of yin and yang illustrate polar energies in which the male and female come together to
form the whole. Wolf continues: "I knew that quantum waves existed spread out
through space and even beyond barriers of time. I knew that these waves affected
matter" (p. 29).

Callicott (1985) suggests a relationship between environmental ethics and
quantum theory. His premise is related to the supposition of intrinsic value in nature.
He sites the work of Shepard (1969) and Capra (1979) in regard to the unity that
exists within the self and the environment.

...that nature is one and continuous with the self, and with the bulk of
modern moral theory that egoism is axiological given and that the self-
interested behavior has a prima facie claim to be at the same time
rational behavior, then the central axiological problem of environmental
ethics, the problem of intrinsic value in nature may be directly and
simply solved. If quantum theory and ecology both imply in
structurally similar ways in both the physical and organic domains of
nature the continuity of self and nature, and if the self is intrinsically
valuable, then nature is intrinsically valuable. If it is rational for me to
act in my own best interest, and I and nature are one, then it is
rational for me to act in the best interests of nature. (Callicot, 1985 p.
274-275)

Again, the theme based upon quantum theory emerges, the interconnectedness
of all within the universe, including the self and all of nature. It is possible that this
is in effect the same principle of the vibratory systems and the energy of the male and
female that Wolf (1991) discusses.

Quantum theory as it relates to the concepts of self and the unity and intrinsic
value of nature, is also discussed in relation to the component of creativity, thus
bridging the relationship of self, environmental ethics, and creativity. It is suggested
in part, that at the time of creative insight, there is a balance between the outer world
of the conscious and the inner world of the unconscious. The didactic interplay of the masculine and feminine energies could allow the use of both the conscious and unconscious in creative acts.

Our relationship to the environment and each other may depend greatly on our movement away from the linear lifestyle to a consciousness that includes the intuitive and spiritual aspects of our being. Many have sent forth a call for a new world view in which humans are not the masters of nature but an intricate part of the balance and harmony within. Such concepts that represent this balance and harmony must now be further investigated in relation to the integration of the self--mind, body, and spirit as a valuable part of our relation to nature. The eco-feminist movement, Gaia theory, Jungian psychology, Eastern philosophy, Native American spirituality, and research along the lines of quantum theory all contain components that relate to wholeness, balance and harmony.

Human’s place in and attitude toward the environment would face a paradigm shift if further research substantiates the interconnectedness of mind, body, spirit and humans and nature. "Mythic, animistic, and religious ways of thinking can no longer be kept at bay. Nothing less than a revolution is at hand" (Sheldrake, 1991, p. 75). Such interconnections would also give credibility to further studies of mind, body, spirit separation. Organizations and education would focus on the total individual and his/her relation as part of the whole. The importance of one’s thoughts and actions would be accentuated as effecting other parts of the whole (both people and nature).
It is feasible that organizations would also consider implications of a holistic worldview. Philosophies of Eastern and Primal cultures could be integrated into the philosophies of education and industry.

Our relation to the environment would change as a unity philosophy developed. Highwater (1981) states: "From the polysynthetic metaphysic of nature envisioned by Primal peoples, from a nature immediately experienced rather than dubiously abstracted, arises a premise that addresses itself with particular force to the root cause of many contemporary problems, especially to our present so-called ecological crisis" (p. 206).

Issues such as pollution would be thought of in a different context. For example, pollution is in effect a side product of disregard for the environment. It is a symptom rather than a cause. Picking up litter and instating a fine for industries that pollute is treating the symptoms, not the cause. The cause is each individual and his/her disregard, lack of concern, and ego centeredness. The basic ideals of individuals and scientific communities must include responsibility.

Modern society cannot afford to continue to educate scientists and engineers without making the foundation for their understanding of ecology and self-awareness. The danger of science today is that it operates as if it exists without any overall context or responsibility for its actions. The result is pollution and resource destruction. The new sciences must be holistic, organic efforts to tinker with the forces of nature, rather than systems bending these forces to fit the whims and economic cravings of people. (Swan, 1990, p. 185)

If Gaia theory is correct and the earth is a living, self-regulating organism; Mother earth will survive, perhaps without humans.
In this study, those individuals who scored high with a significant correlation among the variables of self-actualization, creativity, and androgyny seem to have gained a better understanding of the earth and our relation with nature. They seem to have begun the unity and self-awareness that will be necessary for the future.

**Recommendations for Further Study**

1. Correlational studies of Myers Briggs Type Indicator to factors of androgyny, self-actualization, creativity and environmental ethics.

   The relation of typology to the variables of self-actualization, androgyny and environmental altitude would give further insights. Myers and McCaulley (1988) found creative individuals are of the intuitive, perceptive type. Is there a certain typology indicative of a person who is self-actualized, androgynous and hold a positive environmental attitude?

2. Development of a more comprehensive instrument regarding environmental attitudes.

   As was presented in Chapter Three, an instrument that deals with environmental issues other than those focusing on pollution would be necessary to gain insight into an individual’s attitude toward the environment. It was also suggested that "filler questions" would also be used as to remove the directness of the subject matter and biasing the answers.

3. Use of adult participants in studies relating to the factors of androgyny, self-actualization, creativity and environmental ethics.

   According to Pascal, (1992) it is in mid-life that the integration of the anima and animus is most apt to take place. For this reason a study of adults is suggested.
It is interesting to note, on the other hand, that of the study population there were 25 individuals who scored as androgynous and 24 who were cross-sex typed. This appears to be a large portion of the population, thereby presenting the question: "does the integration really become more complete in mid-life, or is this study group indicative of young adults today?". For this reason research with a group of students enrolled in a traditional high school should be done. Knowledge gained could indicate if a societal trend toward the blending of masculine and feminine is occurring or if the study population’s high incident of androgyny and cross-sex type is a function of other factors that are also related to the self-selection of attending the alternative school.

4. **Investigation of the subgroup which was classified as "cross-sex typed" on the *Bem Sex-Role Inventory* both from a typology perspective and as a longitudinal study to look at sex-role and self-actualization.**

   Does an individual have the ability to change his/her sex-role? This should be possible based on the fact that the indices measure culturally accepted stereotype traits. As the individual progresses towards self-actualization, traits related to femininity and masculinity should also change. Much of this could be accomplished, and perhaps has already begun, by a shift in the cultural definition of masculinity and femininity.

5. **Further investigation of suppositions of quantum theory in relation to creativity and integration of the mind, body and spirit, based on Eastern and Native American philosophy.**

   The premises of interconnectedness, animism, energy flow, speculation on sacred space, Gaia theory, cyclic time, and consciousness could be refuted or supported based on further investigation of quantum theory.
6. Longitudinal studies should be employed in which methods to enhance creativity are used. A comparison of pre-post test results using variables of androgyny, environmental attitude, and self-actualization in relation to creativity would indicate if change in one variable would cause a change in the others.

Because of the relationships could an increase in one variable also cause an increase in the other variables? There are many who advocate that an individual's inner tendency toward creativity can be enhanced. If the variables of creativity, self-actualization, androgyny, and environmental attitude are relational, an increase in one could possibly indicate an increase in others.

This study is only a starting point in an investigation into the integration of the self, the implications of a holistic approach to life, spirituality, and chaos theory in an effort to further understand the place of humans in the web of life.
APPENDIX A

HOW DO YOU THINK FORM E
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APPENDIX B

REFLECTIONS OF SELF AND ENVIRONMENT (ROSE)
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APPENDIX C

BEM SEX-ROLE INVENTORY
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APPENDIX D

ENVIRONMENTAL ATTITUDE AND KNOWLEDGE SCALE
SECTION I

PLEASE ANSWER T (TRUE) OR F (FALSE) TO EACH OF THE FOLLOWING

______1. I’d be willing to ride a bicycle or take the bus to work/school in order to reduce air pollution.

______2. I would probably never join a group or club which is concerned solely with ecological issues.

______3. I would be willing to use a rapid transit system to help reduce air pollution.

______4. I would not be willing to give up driving on a weekend due to a smog alert.

______5. I’m really not willing to go out of my way to do much about ecology since that’s the government’s job.

______6. I would donate a day’s pay to a foundation to help improve the environment.

______7. I would be willing to stop buying products from companies guilty of polluting the environment, even though it might be inconvenient.

______8. I’d be willing to write my congressional representative weekly concerning ecological problems.

______9. I probably wouldn’t go house to house to distribute literature on the environment.

______10. I would not be willing to pay a pollution tax even if it would considerably decrease the smog problem.
SECTION II

PLEASE ANSWER T (TRUE) OR F (FALSE) TO EACH OF THE FOLLOWING

1. I guess I’ve never actually bought a product because it had a lower polluting effect.

2. I keep track of my congressional representative’s and senator’s voting records on environmental issues.

3. I have never written a congressional representative concerning the pollution problems.

4. I have contacted a community agency to find out what I can do about pollution.

5. I don’t make a special effort to buy products in recyclable containers.

6. I have attended a meeting of an organization specifically concerned with bettering the environment.

7. I have switched products for ecological reasons.

8. I have never joined a cleanup drive.

9. I have never attended a meeting related to ecology.

10. I subscribe to ecological publications.
SECTION III

PLEASE ANSWER T (TRUE) OR F (FALSE) TO EACH OF THE FOLLOWING

1. I feel people worry too much about pesticides on food products.
2. It frightens me to think that much of the food I eat is contaminated with pesticides.
3. It genuinely infuriates me to think that the government doesn't do more to help control pollution of the environment.
4. I feel fairly indifferent to the statement: "The world will be dead in 40 years if we don't remake the environment."
5. I become incensed when I think about the harm being done to plant and animal life by pollution.
6. I'm usually not bothered by so-called "noise pollution."
7. I get depressed on smoggy days.
8. When I think of the ways industries are polluting, I get frustrated and angry.
9. The whole pollution issue has never upset me too much since I feel it's somewhat overrated.
10. I rarely ever worry about the effects of pollution on myself and family.
APPENDIX E

PERMISSION LETTER TO PARENTS FOR PARTICIPATION
May 5, 1994

Dear Parent:

Your student has indicated an interest to participate in a study I am conducting at Linworth Alternative School under the guidance of Dr. Joe E. Heimlich from The Ohio State University. I am a Ph.D. candidate at OSU and will use the study as part of my dissertation.

The study will take place May 25, 1994. Dr. Ed Shea is the representative from Linworth's faculty, and will attend the session. The session will be conducted at school and last approximately one hour. At that time, the students will be asked to complete four questionnaires. Each questionnaire asks for the student's attitudes and opinions. The students may withdraw at any time during the study, and at no time will the students be asked to indicate their name on any instrument.

If any of the students and/or parents are interested in the results of the study, an informational session will be held in September. These instruments are regarded as a taxonomy and indicate preferences. There is no ranking of the students and individual scores reflect only a student's preferences. The last four digits of the phone number will be used as a method to locate individual questionnaires if the student wishes to know his/her individual scores. All individual scores will be kept confidential and the participation in this study will not affect grades or performance at school. The scores will not be part of any school record.

If you agree to your child's participation in this study, please complete and return the enclosed permission form. Any questions or concerns will be gladly answered. Please contact Suzanne at 837-6756. Thank you.

Sincerely,

Joe E. Heimlich, Ph.D. Suzanne Hutchinson
Assistant Professor, Environmental Education Ph.D. Candidate, Ed. Theory & Practice
APPENDIX F

SCRIPT OF INSTRUCTIONS TO PARTICIPANTS
Introduction of researcher

Thanks for agreeing to participate

Each student has a numbered packet. In each packet are four packets of questionnaires. There are four different colors. On each packet and the outside envelope there is a number. Please check to be sure the inside colored packet numbers match the outside envelope number.

Let's first look at the white packet. (Bem sex-role) There are written instructions. We'll go over these. On the next page, you will find listed a number of personality characteristics. Use those characteristics to describe yourself. They are numbered from 1 to 7 indicating how true each of these characteristics is for you. 1 if it is never or almost never true, 2 if it is usually not true, 3 if it is sometimes but not often true, 4 if it is occasionally true, 5 if it is often true, 6 if it is usually true and 7 if it is always or almost always true. There are no right or wrong answers. Just answer as honestly as you can.

In the space where the form asks for your name please write the last four numbers of your telephone number, (or social security number). The reason I am asking for these numbers is to insure you confidentiality. The phone number (or social security number) will be for your identification, so you will be able to identify your questionnaires at a later date. In September we will hold another after school session.
and I'll be happy to share the results of the research and answer any questions you have. If your parents would like to attend at that time they are welcome.

The yellow packet asks about your interests, attitudes, and self perceptions. This is a rating scale like the first packet in which you indicate the degree to which you agree with or accept the statement. Again there are no right or wrong answers. Turn to page two of the yellow packet and you will see that "a" means no the statement does not apply to you, "b" means to a small degree the statement applies, "c" means average, "d" is that the statement applies more than average and "e" means definitely the statement applies to you. Again do not put your name in the space for "Name" only the last four numbers of your phone number (or social security number).

The pink packet also asks about your interests, attitudes, and self-perceptions. This is marked just like the yellow packet, in which you mark the degree to which you agree with or accept the statement. "a" means no the statement does not apply to you, "b" means to a small extent the statement applies to you, "c" means average, "d" means more than average, and "e" means that the statement definitely applies to you. Do not put your name on this form either only the last four numbers of your phone number, or social security number).

OK. Lets look now at the blue packet. Please respond to sections 1, 2, and 3 with a
true or false in the left hand margin. Section 4 please circle the your answer. Since there is no space for name and it says phone number (or social security number) we’ll put that in the space.

The directions are also on each packet, but if you have any questions concerning the directions, just ask and I’ll be happy to answer them.

What is important is how you feel about each statement. If there are questions you do not want to answer, you may skip these. You may also withdraw and turn in your questionnaires at any time without any penalty. There is no time limit so work at your own speed. When you have completed all four forms place them back in their envelopes and return them to me. Thank you for participating in this study.
REFERENCES


Davis, G.A. (1988). Personal Correspondence


