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The purpose of this study was to investigate the interaction of personality and movement preference. Primary explorations examined relationships between personality and preferences for non-implement and implement movement patterns of eight basic effort themes. Subsequent explorations delved into personality and movement preference differences between the dance and sport groups.

The subjects for this study were twenty-six, female dance-oriented and twenty-six, female sport-oriented students enrolled in the tenth, eleventh, and twelfth grades at New London Senior High School, New London, Connecticut. Each subject executed one non-implement and one implement movement pattern for the slash, wring, dab, punch, glide, flick, press, and float effort themes and then judged each pattern against a series of descriptive scales on a semantic differential questionnaire. Each subject also completed Thorpe, Clark, and Tiegs' 180-item California Test of Personality.

Pearson Product-Moment, Fisher's "t", "z" transformation, and analysis of variance were the statistical processes employed to treat the data. The following results were obtained: (1) There were no significant relationships between personality and total movement preference, non-implement movement preference and implement movement preference with regard to the dance, sport, and combined groups.

(2) There were no significant differences between the dance and sport groups with regard to personality and movement preference relationships. (3) There were no significant differences between the dance and sport groups with regard to personality or movement preferences. (4) There were significant differences between preferences for non-implement and implement movements with regard to the dance and combined groups, but not with regard to the sport group. (5) There were no significant differences between the dance and sport groups with regard to preferences for any of the effort themes. (6) There were significant differences between preferences for each of the effort themes with regard to the dance, sport, and combined groups.

On the basis of the statistical results, it was concluded that personality was not related to movement preference, high school girls affiliated with dance resembled high school girls affiliated with sport with regard to personality and movement preferences, sport subjects expressed equal desire to execute movement patterns with or without equipment while dance subjects preferred not to employ equipment, and high school girls affiliated with dance and sport preferred to execute some effort theme movement patterns more than other effort theme movement patterns.

THE PERSONALITY AND MOVEMENT PREFERENCE RELATIONSHIPS OF HIGH SCHOOL GIRLS AFFILIATED WITH DANCE AND SPORT

by

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APPROVAL PAGE

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CHAPTER I

INTRODUCTION

From birth, man reacts to stimuli in his personal-social world. Genetic dispositions, socio-cultural pressures, and environmental situations interact and help determine what and how stimuli are perceived. Such dispositions may also be responsible for the feelings and emotions felt and/or expressed in response to the stimuli, and they may be instrumental in the development of connotations associated with the stimuli.

Within a lifetime, an individual is constantly interpreting experiences, relating them to each other, and building one upon another in such a way as to gradually construct a larger and larger realm of experience. Within the process, the individual attaches values to stimuli according to the degree of meaningfulness they hold for the perceiver. Objects and events seeming to be the most meaningful tend to be most often pursued and may prompt consistencies in behavioral reactions linked with specific objects and events. When the reactions are positive, the individual may be said to prefer whatever stimulated the behavior.

Preferences may include the foods one finds delectable, the books and movies one enjoys, the clothes one

selects to wear, the occupation one chooses to pursue, the people with whom one associates, and, generally, what one likes to do and how one likes to do it. These preferences seem to be partially expressive of the individual personality. They may serve as a frame of reference or perspective from which one comes to know and understand the world.

Preference is also evident in the area of movement behavior. Movement is the first and last feat of life and it permeates through the individual's entire realm of experience. Therefore, it is reasonable to find the same general pattern of perception and understanding developing in movement behaviors. The interaction of heredity, society, culture, and environment shapes the individual and sends him in certain directions. Morphology influences function, having a significant effect on a person in terms of how he can move and how he most easily moves. Parental images and pressures, peer associations, and acceptable codes of action are socio-cultural factors influencing how a person <u>wants</u> to move, how he is <u>allowed</u> to move, and how he <u>actually</u> moves. And weather, terrain, and geographical proximities effect the way a person moves as he adjusts to his surroundings.

An individual's temporary mood and consistent inner attitudes may also be expressed in direction, force, size, and tempo of movement. In this sense, movement is a nonverbal expression of how a person feels and what he thinks

about his experiences. Thus, one's tendencies to move in uniquely characteristic ways may be one indication of the individual's personality which may cyclically influence how one moves. The same tendencies may be among the unique characteristics distinguishing one person from another.

Movement in sport and dance also is expressive of the individual. It reflects feelings and thoughts about the person himself and offers a medium for expression much like painting and music. People often participate in physical education activities because of personal connotations affixed to the activities. Activities may be appealing because of the possible recognition, prestige, acceptance, challenge, expression, hedonistic and aesthetic experiences, and self-realization they offer the participant.

Inherent capabilities, parental desires, peer interests, and geographical popularity of activities may influence activity preferences and help explain participation in specific activities. Furthermore, activity interest may reveal what a person is expected to do and be, what he wants to do and be, and what he does and becomes.

There is some evidence to indicate that preferences for specific dance and sport activities are related to aspects of personality. Considering that movement is the core of such activities, that movement seems to reflect the individual in functional and expressive acts, and that

preferences tend to reveal individual consistencies in behavior, it seems logical to assume that preferences for specific kinds of movement may be related to personality. The feelings, emotions, and connotations associated with some movements may be consistently meaningful enough to elicit preferences for those movements. Also, the individual's tendencies to move in set ways in daily activities may be further emphasized in how he likes to move and express himself in dance and sport; and such activities may offer the extreme in an attempt to balance one's self or achieve variety. Preferences for different degrees of movement quality and use of equipment may be related to how and what the mover feels about himself and his world. They may explain preferences for specific sports, for positions played, for a kind of dance, or for dance as opposed to sport.

Information concerning movement likes and dislikes of individuals interested in different activities might help determine whether movements themselves are significant motivators in activity preference. Information might also reveal differences and similarities of individuals participating in different activities. It might assist in answering a number of other relevant questions. Do sport-affiliated people like different forms and qualities of movements than dance-affiliated people? Is movement quality or equipment more significant in movement pattern

preference determination? Does repeated execution of specific movement patterns have any effect on personality? Can movement preferences be predicted from personality? Can personality be discerned from movement preferences? Are connotations of a preferred movement similar for two different people preferring the same movement?

The array of questions which may be posed about the nature of movement and personality relative to physical education is very broad. Before the extent of each question can be considered, the primary question must be explored. With that in mind, this research attempted to examine a possible relationship between personality and movement preference. It is hoped that the findings will shed some light on a few basic questions and offer directions for future studies concerned with behavioral patterns of human movement -- a topic inherent in the objectives of physical education.

CHAPTER II

STATEMENT OF PROBLEM

The purpose of this study was to investigate the interaction of personality, as determined by the California Test of Personality (Thorpe, Clark, and Tiegs, 1953), with movement preference patterns. Movement preferences were determined by the evaluative scores of the subjects' numerically weighted responses on a semantic differential questionnaire which was administered after execution of movement patterns representing eight effort themes (Laban and Lawrence, 1947).

The study was designed to determine if significant relationships existed between personality and preferences for non-implement and implement movement patterns of the eight effort themes, and to determine if subjects who identified with dance differed significantly in the interacting relationships from subjects who identified with sport. The design was also structured to determine if the subjects preferred non-implement or implement movement patterns or any of the effort themes, and to determine if the dance and sport groups differed with respect to those preferences. Determination of personality differences between the dance and sport groups, as measured by the California Test of Personality, also was accommodated by the design.

The following operational definitions have been utilized in this study:

Dance group - a group of female subjects between the ages of fifteen and eighteen strongly preferring to engage in dance and/or floor exercise rather than sport activities, as indicated by their stated interest, demonstrated proficiency, and active participation in those areas.

Sport group - a group of female subjects between the ages of fifteen and eighteen strongly preferring to engage in sport rather than dance and/or floor exercise activities, as indicated by their stated interest, demonstrated proficiency, and active participation in those areas.

Movement pattern - a short series of specific, teachable gestures and weight-bearing actions combined to emphasize one effort theme.

Non-implement movement pattern - a movement pattern not requiring adaptation to and/or control of equipment.

Implement movement pattern - a movement pattern requiring adaptation to and/or control of equipment.

Evaluative score - the sum of a subject's five numerically weighted responses to an individual movement pattern on five semantic differential factor scales employed as a measure of preference.

Total movement preference - the degree of one's positive and negative feelings for movement, determined by summing the evaluative scores of a subject's responses to sixteen movement patterns as measured by a semantic differential technique.

Non-implement movement preference - the degree of one's positive and negative feelings for non-implement movements, determined by summing the evaluative scores of a subject's responses to the eight non-implement movement patterns as measured by a semantic differential technique.

Implement movement preference - the degree of one's positive and negative feelings for implement movements, determined by summing the evaluative scores of a subject's responses to the eight implement movement patterns as measured by a semantic differential technique.

Effort theme preference - the degree of one's positive and negative feelings for one effort theme, determined by summing the evaluative scores of a subject's responses to the two movement patterns representing one specific effort theme as measured by a semantic differential technique.

Personality - a term referring to the efficiency and means by which a whole individual meets his personal and social problems, and impresses others, as measured by Thorpe, Clark, and Tiegs' 180-item California Test of Personality (1953).

CHAPTER III

REVIEW OF LITERATURE

Literature specific to a relationship between personality and movement preference in physical education is sparse. Therefore, before discussing the limited information that was available, each general area of knowledge was reviewed separately so as to achieve a clearer understanding of the components of the topic under investigation.

Personality was approached in terms of several types of personality definitions, the most widely recognized theories, and various means of measuring the phenomenon. Movement was reviewed in terms of diverse definitions and systems of classification and in terms of perceptual and conceptual factors pertinent to the subject. Preference was considered from the philosophical viewpoints of value-scientists with due consideration given to the measurement of meaning and preference.

PERSONALITY

Definition

The term "personality" is derived from the Latin word "persona". Emanating from the early theater, the word originally described an individual in terms of the actor (the individual as he really was), the mask (how the

individual appeared to others), the character (the role the individual played in life), and the star performer (the individual as the possessor of qualities of dignity and distinction) (Guilford, 1959: 2-3).

Since the time of the Greek and Roman eras, personality has grown to be an omnibus concept. Its importance in behavior delineation, interpretation, and prediction is generally agreed upon in the literature, but little unanimity exists with regard to defining the phenomenon. Allport (1937) isolated fifty different definitions, Bischof (1970) cited seventy, and the list appears to be growing.

The abundance of definitions prompted the use of grouping for comparative and analytical purposes. Allport (Hall and Lindzey, 1957) sorted his fifty definitions according to the emphasized manner in which a subject was perceived. He used five categories for his sorting. Biophysical definitions emphasized a subject's characteristics and qualities. Biosocial definitions focused on reactions of individuals to the subject. Omnibus definitions included everything about a subject deemed of primary importance in his description. Integrative definitions suggested a subject's organizational functioning; and definitions of adjustment and definitions describing unique aspects of behavior rounded out the categories(Hall and Lindzey, 1957: 8).

Murray and Kluckhohn (1948) distinguished between

centralists and peripheralists, two groups of personality theoreticians responsible for two types of definitions. The centralists focused on subject area such as feelings, desires, and intentions, and were primarily interested in dynamics of behavior change. Defining personality in terms of behavior itself, rather than underlying causes, the peripheralists concerned themselves with the easily measurable variables such as traits and vocational interests. These two broad categories, while less definitive than Allport's (Hall and Lindzey, 1957), suggest the diversity of personality structure and organization theories. Sheldon (1942) and Allport (1937) might be called peripheralists because of their focus on types and traits. Freud (1949) and Lewin (1935) tended to lean toward the centralists' views in light of their theories describing the internal workings of behavior.

Psychoanalytical, learning, and phenomenological were the three types of theories suggested by Sawrey and Telford. They mentioned Freud, Jung, Adler, Erikson, and Horney among psychoanalytical theorists emphasizing the role of motivational and early childhood experiences in personality development (Sawrey and Telford, 1967: 376).

Learning theories, which emphasized learned behaviors and the manner in which they are learned, were represented by Miller and Doddard, and Mowrer. The former pair focused on learning principles of drive, cue, response,

and reward to which individuals respond, and stressed that reinforcement of set responses establishes habits. Mowrer's theory suggested that emotions are attached to stimuli via conditioning, and that emotional states can be considered rewards of a reinforcement (Sawrey and Telford, 1967: 389-90).

The type of theory including the greatest variety of theories appeared to Sawrey and Telford to be the phenomenological category. It stressed the importance of the manner in which an individual's environment is perceived rather than on the objective reality of the stimulating condition. Within phenomenological approaches Sawrey and Telford included field theory, as described by Lewin, organismic theory, as portrayed by Maslow, self theory, emphasized by James and Rogers, and biosocial theory, as developed by Murphy (Sawrey and Telford, 1967: 376-86).

Horrocks and Schoonover assigned definitions to five different categories: inclusive, hierarchical, integrative, adaptive, and idiosyncratic. Inclusive definitions described "... personality as a summation of various more-or-less independent traits or behavior units" (Horrocks and Schoonover, 1968: 401). Hierarchical definitions emphasized organizational aspects of personality in vertical, rather than horizontal, terms. Maslow's hierarchy of needs and James' definitions of four levels of self were mentioned in this category. Integrative definitions also approached

personality in terms of its organizational aspects composing behavior, but their emphasis was in horizontal terms. Adaptive definitions focused on "... the effectiveness with which an individual is able to cope with his environment" (Horrocks and Schoonover, 1968: 402). Exemplifying that perspective was Watson's view of an individual's total assets and liabilities. Completing Horrocks and Schoonover's category system were idiosyncratic definitions concerned with an individual's uniqueness in relation to others and sometimes distinguishing between the individual and his culture (Horrocks and Schoonover, 1968: 401-2).

Methods of categorizing definitions are in no way restricted to the four just reviewed. Those presented were selected to illustrate a variety of approaches and to intimate the subtle and obvious repetition and overlapping typical when such a broad topic as personality is under scrutiny. Although classifications systemize definitions into supposedly more meaningful groupings, understanding of a personality construct is probably best enhanced by surveying some of the significant and universally recognized theories.

Theories

Allport defined personality as "... the dynamic organization within the individual of those psychological systems that determine his characteristic behavior and

thought" (Allport, 1961: 28). He conceived of personality as a self-contained system developing through the interplay of physique, intelligence, and temperament (Bischof, 1970: 290). Consequently, he acclaimed Sheldon (1942) for the latter's research on physique and temperament relationships. To Allport, the structure of personality is based on functional autonomy, a law of motivation in which exist strong tendencies for an individual to develop a motive system capable of becoming independent of the primary drive initiating the action (Bischof, 1970: 294). In reference to the relationship between tendencies and personality, Allport stated:

> The systems that constitute personality are in every sense determining tendencies and, when aroused by suitable stimuli, provoke those adjustive and expressive acts by which the personality comes to be known (Allport, 1937: 49).

Unlike Allport (1937), who saw the human personality achieving progressively higher levels of behavior resulting from the action of stimuli, Freud placed emphasis on instincts and inherited propensities, the forces assumed "... to exist behind the tensions caused by the needs of the id..." (Freud, 1960: 19). He also described man as a pleasure seeker with pleasure being a motivator explaining how man acts, but not necessarily why (Freud, 1955). Freud's dynamics of personality consisted of the interplay of cathexis and anti-cathexis forces of three separate but interacting

systems: id, ego, and superego. In considering the systems, Freud concluded:

> ... It will be seen that, in spite of their fundamental difference, the id and the superego have one thing in common: they both represent the influence of the past (the id the influence of heredity; the superego essentially the influence of what is taken over from other people), whereas the ego is principally determined by the individual's own experience, that is to say by accidental and current events (Freud, 1949: 17).

Thus, in Freud's theory, the way in which the three complex systems use and distribute psychic energy is indicative of the individual's character structure (Hall and Lindzey, 1957: 41).

Both Freud and Jung viewed man as a vacillator between poles in a world of opposition (Bischof, 1970: 123). The view was quite contrary to Allport's (1937) theory of man as a unique entity. Jung's (1939) theory described personality in terms of several separate, but interacting, systems collectively called the "psyche". Based on physical and thermodynamic laws of equivalence and entropy, Jung believed that as one of man's desires diminishes, an equal amount of desire is directed toward something else. He also suggested that man tries to balance behavior as outside forces try to counteract the balance. The two mentioned principles serve as a core for the concept of self-actualization, the mechanics of which include processes such as symbolism in words, pictures, and various art forms to achieve a more differentiated self (Bischof, 1970: 140).

Horney, a psycho-social theorist, and Erikson, a developmentalist, were Neo-Freudians (Sawrey and Telford, 1967). Despite their mutual roots, both developed theories which digressed from Freud's and differed from each other's. Horney's (1950) principle concept is one of basic anxiety and neurotic needs, such as excess need for love, independence, and power. Despite her theory's prevailing reference to neurotic tendencies, Horney believed man to have a more positive nature than Freud (1949) depicted. In a brief critique, Horney stated that her philosophy, "... with all its cognizance of the tragic element in neurosis, is an optimistic one" (Horney, 1950: 378). She also stressed that personality characteristics are generated by individual experiences and specific cultural conditions, suggesting that society is also responsible for personality development:

> ... man has the capacity as well as the desire to develop his potentialities and become a decent human being, and that these deteriorate if his relationship to others and hence to himself is, and continues to be, disturbed. I believe that man can change and go on changing as long as he lives (Horney, 1945: 19).

Thus, Horney believed that she replaced a prevailing anatomical-physiological orientation with a prevailing sociological orientation (Horney, 1939: 9).

Erikson (1950), like Freud (1949), delineated ages of ego development. However, he was in discord with Freud over the destiny of an individual's personality. Freud

believed that it is set after childhood, while Erikson contended that it develops from the interplay of personal and social structures and is never gained once and for all. Although he did not discount inherited tendencies, Erikson realistically emphasized cultural factors. Similar to Jung (1939), who discussed the development of values, Erikson enumerated eight basic values emerging from generation to generation. Among them were drive and hope, direction and purpose (Bischof, 1970: 576-80).

Influenced by Gestalt psychologists, Lewin (1935) defined personality as a differentiated region of life space and as an organization of interrelated psychical systems. One significant contribution to personality theory was his field of force concept in which the life space is considered to be a field of forces producing movement toward or away from objects and situations according to the valence, or desirability, of those objects or situations. Thus, the perception of an individual and his subsequent response, is determined by the context and configuration of the individual's total field (Lewin, 1951). In respect to presenting dynamic systems of psychological needs, Lewin's theory is much aligned with Freud's (1949).

Man's need to overcome feelings of inferiority is the basis of Adler's (1927) individualistic personality theory. Unlike Freud (1949) and like Horney (1945), Adler considered man capable of improving his state. He stressed

that man pursues a unique life style developed from his inner self-driven and self-dictated directions coupled with environmental forces:

> ... Each individual adopts for himself at the beginning of his life, a law of movement, with comparative freedom to utilize for this his innate capacities and defects, as well as the first impressions of his environment. This law of movement is for each individual, different in tempo, rhythm, and direction. The individual, perpetually comparing himself with the unattainable ideal of perfection, is always possessed and spurred on by a feeling of inferiority (Adler, 1964: 37).

Maslow (1970) believed in the innate goodness of man and blamed badness on bad environments. Crediting Adler (1927) with a keen understanding of the need aggregate, Maslow implied an ascending degree of psychological health achieved through proper growth motivation (Bischof, 1970: 548). Thus, he stated:

> ... the chief principle of organization in human motivational life is the arrangement of basic needs in a hierarchy of lesser or greater priority or potency. The chief principle animating this organization is the emergence in the healthy person of less potent needs upon gratification of the more potent ones (Maslow, 1970: 59).

Maslow specified that by progressively satisfying physiological safety, belonging, love, esteem, self-actualization, cognitive, and aesthetic needs, man strives for complete self-actualization (Maslow, 1970: 35-51).

A rather unique approach to understanding behavior involved a system of somatotyping developed by a constitutional psychologist. In The Varieties of Human Physique,

Sheldon (1940) established a classification system based on the presence of fat, muscle-bone, and central nervous system tissue in an individual. The size and shape of human beings were expressed in three basic morphological components: endomorphy, mesomorphy, and ectomorphy. In The Varieties of Temperament (1942), the same author focused on three isolated components of temperament: viscerotonia, somatotonia, and cerebrotonia. By comparing components of morphology to components of temperament, Sheldon derived a taxonomy of human beings founded on both physical and psychological traits.

Rogers (1951) presented a phenomenological theory incorporating concepts of the total individual, totality of expression, the self, and I-me values. Man exists in a dynamic world of experience and reacts to the field according to how it is perceived. Experience leads to the development of the self, described as "... the strivings, emotional feelings, and ideas that the individual recognizes, interprets, and values as his very own" (Rogers, 1951: 498). Behavior is accompanied by emotion and the intensity of the emotional reaction is dependent upon its perceived significance. Rogers did not believe in Freud's theory that behavior is caused by the past. Instead he found that "... there is no behavior except to meet a present need" (Rogers, 1951: 492). Like Horney and Adler among others, Rogers presented an optimistic theory of man's present and future status. He emphasized that the structure of

personality is based on one's experiences dynamically represented in man's desires to actualize, maintain, and enhance the self.

One of the more eclectic theorists appeared to be Murphy, who drew on the theories of such known psychologists as James, Allport, Sheldon, and Lewin (Bischof, 1970: 361). Like Sheldon, Murphy discussed anatomical clues limiting or controlling behavior. Similarities to Lewin's field theory are revealed in Murphy's view that human nature is a reciprocity of what is inside and out. He and Allport believed that man is a biologically and socially integrated phenomenon; and like Rogers, he described categories of self (Bischof, 1970: 361-62, 386).

Murphy employed traits as surface indicators of a dynamic interdependence of parts. He defined personality as "... the whole dynamic system of tendencies which differentiate one person from another" (Murphy, 1953: v). Therefore, he spoke of personality as a drive system incorporating moods as prominent features, and he considered needs or tensions to be the ultimate elements within the personality structure (Murphy, 1947: 641).

Perhaps in Murphy's theory, the most significant process was canalization in which a hierarchy of conditioned responses determines responses that can later be conditioned. An individual learns to associate symbols with tissue condition and learns to respond appropriately to symbolic

representation of the condition. Thus, general motives have a tendency, on repeated experiences, to be more easily satisfied through the action of the specific satisfiers than others of the same general class (Murphy, 1947: 162).

Personality has been discussed in terms of traits, types, resolution of dominant purposes in life, psychological needs, and conflict resolution. As illustrated in the review, the phenomenon is a complex one with tremendous breadth and diversity reflected in short definitions and theoretical explanations. Varying theories and definition category systems are not necessarily incompatible with each other. As has been shown, there is much overlapping as a result of early theories being the basis for the formulation of newer ones. The differences appear to be in terms of emphasis with the nature of the theory reflecting the theorists' own perspectives and styles of explanations. The number and assortment of approaches is almost inevitable considering the number of individuals focusing on a concept of such generality. Perhaps one explanation for the number and variety of theories and definitions is that suggested by Lecky:

> ... The personality is a concept of the organism created by us as a means of assisting our understanding of psychological phenomena... We have not changed the organism, of course, but we have changed our conception of it and think about it differently (Lecky, 1945: 117).

Measurement

In early cultures, attempts to measure personality were humoral and morphological in nature and often employed techniques involving astrology, numerology, horoscopy, palm reading, phrenology, and chirography. Such methods evolved out of one person's interest in another and in the ability to symbolize an estimate of one's self or another individual (Allen, 1958: 6, 17).

Nineteenth and early twentieth century techniques were the forerunners of today's more modern and scientific methods. In 1869, 1874, and 1900, Galton employed questionnaires to investigate imagery, hereditary genius, and personality typology. Kerner introduced a forerunner to the inkblot test. Contemporaries Binet and Henri, 1895-96, Dearborn, 1898, and Sharp, 1899, undertook investigations which led to measuring instruments with varying degrees of structured stimuli (Allen, 1958: 6).

With the influx of numerous personality theories came equally numerous assessment techniques. According to Horrocks and Schoonover (1968), techniques fall into four different categories: personal report, projective, observational, and miscellaneous. Personal or self-report instruments present themselves in the form of questionnaries. A subject rates himself on specific attributes or answers questions about his likes, dislikes, interests, feelings,

and so forth (Horrocks and Schoonover, 1968: 492), (Thompson, 1968: 577).

Projective techniques assume that the subjects "... will project his needs, aspirations, and frustrations onto what appears to be a socially irrelevant stimulus-configuration, amorphous and ambiguous in nature" (Thompson, 1968: 577). Observational techniques include ratings and opinionnaires completed during or following the observation of a subject. And the fourth category employs interviews, case histories, personal documents, and anecdotal records to draw conclusions about an individual's behavior (Horrocks and Schoonover, 1963: 405).

Of those four categories, the self-report questionnaire has been the most commonly used. Within the category are single trait inventories approaching personality with the view that one phase of a person can be extracted from his total makeup (Allen, 1958: 89). Better item construction and more refined statistical analysis have improved the status of inventories. Among the improvements has been the construction of the multi-dimensional inventory which appears to give a broader picture of the individual than its predecessors did (Horrocks and Schoonover, 1968: 405), (Allen, 1958: 91).

One typical multi-dimensional inventory is the California Test of Personality (Thorpe, Clark, and Tiegs, 1953), on which a subject is forced to choose between yes or no responses to questions concerning his personal and

social adjustment. Thorpe, Clark, and Tiegs employed the term "personality" to refer "... to the manner and effectiveness with which the whole individual meets his personal and social problems, and indirectly the manner in which he impresses his fellows" (Thorpe, Clark, and Tiegs, 1953: 2). Consequently, the authors organized the test on the concept of life adjustment as a balance between personal and social adjustment founded on feelings of personal and social security (Thorpe, Clark, and Tiegs, 1953:3).

The inventory covered six personal and six social components exhibiting themselves as tendencies to feel, think, and act. The first six include self-reliance, sense of personal worth, sense of personal freedom, feelings of belonging, freedom from withdrawing tendencies, and freedom from nervous symptoms. The second six include social standards, social skills, freedom from anti-social tendencies, family relations, school relations, and community relations.

Five levels of the test were constructed for use with different age groups. The test was based on the study of more than 1000 criteria or specific patterns of responses to specific situations. Educators and clinical psychologists evaluated the criteria and eliminated, reclassified, or restated statements where necessary. Test items were devised to correspond with validated criteria and were subjected to studies for finalization. Items were rated to help determine appropriateness, difficulty, significance,

and ability of the items to elicit accurate information. The most highly rated items were administered to subjects to determine the subjects' willingness to give true responses. The surviving items were grouped into categories according to psychological likeness and age suitability (Thorpe, Clark, and Tiegs, 1953: 9).

Statistical studies estimated the relative significance of the items and the best scoring items were administered for norming and computation of the reliabilities of the twelve components. Cited reliability coefficients range from .51 to .97, with a tendency toward the higher coefficients. Intercorrelations between personal and social adjustment components range from .63 to .77 (Horrocks and Schoonover, 1968: 412). The test manual reports the Personal Adjustment score reliability as .83, the Social Adjustment score reliability as .80, and the Total Adjustment score reliability as .88 (Thorpe, Clark, and Tiegs, 1953: 4). Based on the results, it would appear that the three major scores, as opposed to the sub-scores, serve as the more reliable indices of personality as measured by the California Test of Personality (Horrocks and Schoonover, 1968: 412).

The validity of the test was determined in light of its three main purposes:

> 1. To provide a frame of reference (including a conceptual structure and a sampling of specific types of thinking, feeling, and acting patterns) regarding the nature of personality determinants and their relationships to each other and to the total functioning personality.

> 2. To provide information about individuals which is useful in understanding their problems and improving their adjustment.
> 3. To serve as an instrument of research for obtaining other types of information (Thorpe, Clark, and Tiegs, 1953: 7).

The manner in which the test was constructed evidences face validity and numerous studies account for the validity of the instrument relative to its purposes (Thorpe, Clark, and Tiegs, 1953: 7), (Horrocks and Schoonover, 1968: 412).

PREFERENCE

Definition

One of personality's myriad functions and manifestations is the expression of feelings and valuations (Murray and Kluckhohn, 1948). According to the literature, value behavior claims the expression of preference as one of its intrinsic constituents; thus the study of preference falls under the rubric of value sciences (Handy and Kurtz, 1964), (Pepper, 1958). Value-scientists investigate behavior exhibiting

> ... preferences among alternative choices available to individuals and groups, and the criteria, or further set of preferences, that influence the selection of one choice rather than another (Handy and Kurtz, 1964: 131).

The term "value" has many varieties:

> Descriptively, a man's "values" may refer to all his attitudes <u>for-or-against</u> anything. His values include his preferences and avoidances, his desire-objects and aversion-objects his pleasure and pain tendencies, his goals, ideals, interests and disinterests, what he

> takes to be right and wrong, good and evil, beautiful and ugly, useful and useless, his approvals and disapprovals, his criteria of taste and standards of judgment and so forth (Edel, 1953: 198).

Also different kinds of values are appropriately labelled according to the nature of each. For example, pleasure is sensual, blessedness is religious, and beauty is aesthetic (Parker, 1957: 8).

Lewis distinquished between two types of values: intrinsic values, including values which are immediately enjoyable in some experience, and inherent values, including the potentialities objects have for eliciting those experiences (Lewis, 1947).

Lowen suggested that values have at least six dimensions, including intensity of desire, duration of desire, volume, height or hierarchy of values, harmony involving structural characteristics, and cooperation of diverse desires toward a single satisfaction (Lowen, 1970: 104-15).

Prall (1926), Herrick (1956), and Perry (1926, 1954) agreed that value is concerned with relationships involving objects and interests, but they disagreed about the specific relationship. Prall defined value solely as the interest relation existing between a subject and an object (Prall, 1926: 215, 227). Both Herrick and Perry defined value as the relation between an object and the interest taken in it (Herrick, 1956: 156), (Perry, 1926: 115-24).

Perry went on to refer to interest as "... a train

of events determined by expectation of the outcome," and to refer to a thing as an object of interest when it's expectation "... induces actions looking to its realization or non-realization" (Perry, 1954: 3). He also viewed the concept of interests overlapping the motor-affective area of psychology dealing with desire as well as instinct, purpose, will, feeling, emotion, motivation and a few other concerns (Perry, 1954: 15).

In an article dealing with the classification of human values, Dodd defined value "... as a desideratum, i.e., anything desired or chosen by someone sometime" (Dodd, 1951: 646). Thus, he suggested that there may be more to the concept of value than an existing interest. Value may also revolve around the act of choosing.

Parker (1957) viewed desire, including wish, purpose, drive, instinct, and connotation, as one of many factors comprising value. He suggested three levels of values: satisfactions in activities or passivities, satisfactions from meeting objectives of conscious desires, and satisfactions from meeting personal-social standards set for those satisfactions. Thus, a joy-giving activity or passivity, or the assuagement of desire reflects value (Parker, 1957: 8).

Dewey (1939) rejected desire as a fundamental fact of value contending that desire and satisfaction are not ultimate. Instead, he focused on harmonies of interest:

> Ends in view are appraised as good or bad on the ground of their serviceability in the direction

> of behavior dealing with states of affairs found to be objectionable because of some lack or conflict in them (Dewey, 1939: 47).

Thus, Dewey believed that value, or degree of goodness, involves the resolution of conflicts among desires leading to a "... co-ordinate or unified organization of activities" (Dewey, 1939: 49).

Kluckhohn (1951) conceived of value as a conception of a desirable influencing selection from possible modes, means, and ends of action. Therefore, his concern was for the meaning prompting the interest or desire:

> A value is not just a preference but is a preference which is felt and/or considered to be justified -- "morally" or by reasoning or by aesthetic judgments, usually by two or all three of these (Kluckhohn, 1951: 396).

Another theory concerning meaning is Reid's which emphasizes affective significance:

> This concrete experience with its highly individual affective flavor, its probably unique qualitative determinateness, we shall call a "feeling". ... <u>In its actual presence to attention, this given affective quality, this specific concrete feeling, more or less meaningfully related to the particular context in which it is experienced, is what we shall intend by the term "value"</u> (Reid, 1938: 54).

In summary, value (s) has been classified as intrinsic and inherent, with several dimensions on a hierarchy of levels. Value has been defined in terms of interests, interest relations, and desirables with allusions to associated meanings, and as a point somewhere on a broadly defined good-bad continuum. Thus, value is to be interpreted as a

construct of diverse leanings from a similar origin.

Measurement

Values and their subcategory, preferences, are measurable intensively, not extensively. Therefore, "... judgments of comparative value are relative to the preference of the judge" (Perry, 1954: 54). The status of values and preferences appears to be dependent upon inherent and associated meanings. Consequently, measurement of preference has been approached via measurement of meaning.

One of the earlier attempts to determine meaning involved physiological methods measuring action potentials in muscles, and salivary and galvanic skin responses at the time a concept was introduced to the subject. Learning methods involved semantic generalization, and transfer and interference studies. Also employed as a measure of meaning were perceptual, association, and scaling methods (Osgood, Suci, and Tannenbaum, 1957: 11-17).

Osgood (1952) reviewed the above techniques to determine their adequacy of objectivity, utility, and efficiency. He found physiological methods cumbersome, learning methods cumbersome and lacking comparability, perceptual methods invalid, associative methods lacking comparability and dependent in part on the meaning of the stimulus, and scaling methods only partially valid due to only partial meaning (Osgood, 1952: 221-22). Due to the lack of a truly valid method of measuring meaning, Osgood set forth to

develop a new tool, the semantic differential technique, combining controlled association and scaling procedures (Osgood, Suci, and Tannenbaum, 1957:20).

The idea for the semantic differential technique originated in research in synesthesia, a phenomenon characterizing an individual's experience in which sensations of one mode attach themselves to sensations of another mode and appear regularly when the latter stimulus occurs. Research continued on color-music synesthesia and eventually included visual, auditory, emotive, and verbal responses to stimuli (Osgood, Suci, and Tannenbaum, 1957: 20-22). A summary of the work was cited by Osgood and his associates:

> ... The process of metaphor in language as well as in color-music synesthesia can be described as the parallel alignment of two or more dimensions of experience, definable verbally by pairs of polar adjectives, with translations occurring between equivalent portions of the continua (Osgood, Suci, and Tannenbaum, 1957: 23).

Founded on the above, the semantic differential technique was begun as reported by the authors:

> ... by postulating a <u>semantic space</u>, a region of some unknown dimensionality and Euclidean in character. Each semantic scale, defined by a pair of polar (opposite in meaning) adjectives, is assumed to represent a straight line function that passes through the origin of this space, and a sample of such scales then represents a multi-dimentional space. The larger or more representative the sample, the better defined is the space as a whole (Osgood, Suci, and Tannenbaum, 1957: 25).

To test the generality of the adjectives' factor structure, Osgood used varied subject populations, varied

concepts to be judged, and varied judgmental situations to obtain the data. Varied factor methods were employed to treat the data (Osgood, Suci, and Tannenbaum, 1957: 33). Scales of semantic judgment were obtained by analyzing data for frequency of usage. Forty nouns from the Kent-Ross list of free association stimulus words were read to two hundred graduate students. The subjects wrote down adjectives thought of after each stimulus word was read. Adjectives with the highest frequency of usage were put in sets of polar adjectives separated by a seven point scale. New concepts were then selected to be judged against the adjectives. Thurstone's Centroid Factorization Graphic Method was applied to correlations derived from seven-step graphic scale data collected by having one hundred subjects judge twenty concepts against fifty scales. Extracted were factors which appeared to label themselves as to content: activity, potency, and evaluative (Osgood, Suci, 1955: 338).

Suci's D-Factorization Forced-Choice Method of analysis was then employed as a check on the first analysis. Data from forty-subjects' forced-choice pairings of polar terms (when no specific concepts were judged) was collected. A matrix of coordinates, or loadings, on a set of dimensions, or factors, was analyzed. The higher the coordinate of a variable in a dimension, the more closely related the variable was to the dimension (Osgood and Suci, 1955: 338), (Osgood, Suci, and Tannenbaum, 1957: 42).

Comparisons and similarities of the two analyses' results were estimated in three ways: qualitatively by comparing factor loadings with dimension coordinates, quantitatively by comparing magnitude of correlations between factor loadings and coordinates, and the magnitude of indices of factorial similarities between loadings and coordinates.

A third analysis was undertaken to test the exhaustive description of the semantic space of the three extracted factors. From each category of paired words, one pair of polar terms was selected from adjective listings in an attempt to obtain the most representative sample. Words were sorted into piles according to meaning similarities, concepts were judged, and factor analyses were applied (Osgood, Suci, and Tannenbaum, 1957: 48-49).

Results of the three major analyses pointed to the existence of three major factors significant in the measurement of meaning: evaluative, based on rewards and punishments; activity, relative to quickness and excitement; and potency, related to power, size, and weight. Osgood stated that "these three factors are taken as independent dimensions of semantic space within which the meanings of concepts may be specified" (Osgood and Suci, 1955: 338).

Differentiation among concepts revealed that the evaluative factor was two times greater than the potency factor, which was about equal to the activity factor. Although all three factors were determined to be influen-

tial in measuring meaning, the prominence of the evaluative factor confirmed it to be the most important factor in interpreting meaning.

Evaluation proved the semantic differential technique objective in that the procedures were explicit and could be replicated. Face validity showed correspondence with results not measured by the instrument. And test-retest analyses revealed .85 reliability with N = 4000 (Osgood, Suci, and Tannenbaum, 1957: 126).

Suggested uses for the technique include such area as communications, attitudes, personality, aesthetics, and other topics involving meaning. One of the other topics is preference, based on the meaning or value the concept holds for the individual.

MOVEMENT

> ... Movement is a universal human characteristic... Thus to study movement is to study man, for movement is both the medium and vehicle for all kinds of human activity and a deeper understanding and a heightened awareness of movement can bring a greater richness to life (Thornton, 1971: 1).

Analogizing the study of movement and relating it to the study of man testifies to the scope of movement and implies the existence of manifold approaches to define, investigate, and interpret.

Definition

Movement definitions have varied in nature assuming forms of descriptive statements, analogies, metaphors, and potentialities. From a common, fundamental perspective, movement has been defined as a change of body position in space and time through application of varying degrees of force (Smith, 1968: 1), and an aspect of motion concerned with how the body moves and with the dynamics of action (Morison, 1969: 131).

Latchaw and Egstrom (1969: 10) defined movement in terms of body parts changing in space, but credited environmental influences, as well as energy production, for the changes. Not wishing to restrict her definition solely to the release of energy, Hutchinson emphasized that the energy release was through a muscular response to an inner or outer stimulus (Hutchinson, 1954: 10). Thus, her statement complemented Laban's reference to movement as a medium through which man actualizes his responses (Thornton, 1971: 24).

Attempting to define movement in terms of its construction and configuration were individuals accentuating the significance of form. Employing a theory of verbally-oriented symbolization (Cassirer, 1944) as a foundation, Langer (1951) expanded the concept to include non-verbal or presentational forms, such as painting and music. Reasoning that movement is a non-verbal pattern of relationships, she declared movement to be a logical form of the presentational variety

(Langer, 1968: 17).

Metheny adopted the logical form concept and theorized about movement and meaning. She professed movement organizations, patterns, and effective actions to be symbolic forms (Metheny, 1965d: 57) manifest as exercise, dance, and sport, respectively (Metheny, 1968: 40-83).

Movement has been defined as an art form because it is organized in some medium, i.e., painting in oils. Winter defined dance movement as an art form created through the instrument of the human body (Winter, 1955: 2). Cozens and Stumpf considered sport an art form because it is "... as fundamental a form of human expression as music, poetry and painting" (Cozens and Stumpf, 1953: 1). The import of expressive qualities of forms was also recognized by Horst. Capitalizing on the communicative effects of forms as well as their ability to arouse emotions, he stated the "movement is a speech" (Horst, 1954: 1).

Ullmann devoted an entire article to "Movement as Art and Science". In the article, she emphasized movement's artistic, creative-aesthetic realm concerned with the "... development of personal expression of a particular style", and movement's scientific domain considering "... those principles which are common to all human movement" (Ullmann, 1958: 16).

The most encompassing definitions appeared to be those reflecting the previously quoted analogy. Ullmann conceived

of movement as "... the most fundamental and natural function of any living being including man" (Ullmann, 1958: 13). Movement's import was further stressed by Ellfeldt, who described movement as "... the most persistent experience in living -- the first and last expression of life" (Ellfeldt, 1967: 59). And seeing the world full of unceasing movement, Laban concluded, "An unsophisticated mind has no difficulty in comprehending movement as life" (Laban, 1966: 6).

The breadth of the concept of movement has been reflected in a variety of definitions ranging from a few arbitrarily chosen words to grandiose references to life's space-time occurrences possessing meaningful and communicative potentials. However, the encapsulated statements did not penetrate to the depths of movement to expose its elaborate schema. Continued review of the literature disclosed the complexity of movement and revealed a consistently predominant feature of its study: classification.

Classification

According to two kinesiologists, "... rather fixed patterns of responses to movements have encouraged systems of classification of movement" (Morehouse and Cooper, 1950: 193). Analysis of movement regarding joint structure resulted in categories relative to range, direction, and planes of movement. Concern for quality of movement and application of force through joints culminated in classification in terms of

muscle functioning.

Among the latter classifications reviewed, Rasche and Burke's (1964) appeared to be the most inclusive. Posture referred to the continued, steady, static contraction of fixator muscles in maintaining a position. Continued force and maximum speed through the entire range of motion was categorized as maximum force impulse movement. Slow tension movement for accuracy and steadiness involved slow, weak movement in which almost equal forces were applied by opposing muscle groups; rapid tension movement required more force and speed exerted by synergists and antagonists. Ballistic movement referred to motion initiated by vigorous contraction of prime movers with simultaneous relaxation of antagonists and completed by attained momentum. And oscillatory movement referred to rapid tension movements quickly reversed to produce shaking motion (Rasche and Burke, 1964: 69-71).

Other kinesiologists followed similar patterns of organization with personal variations in classification and terms. Cooper and Glassow limited their discussion to slow tension, rapid tension, ballistic, and oscillatory movements (Cooper and Glassow, 1968: 84-86). Earlier, Morehouse and Cooper referred to Rasche and Burke's (1964) posture category as fixation and then proceeded to speak of slow tension, rapid tension, and ballistic movement (Morehouse and Cooper, 1950: 193-95). Clayne and Schultz mentioned two distinct groups;

slow tension movements, as previously described, and maximum force movements, including continuous (rapid tension) movements and ballistic movements (Clayne and Schultz, 1970: 41-42).

Interest in the manner in which movement can be used generated movement categories consisting of basic physical skills. Focusing on skills fundamental to daily activities and pertinent to sport and dance, Broer referred to such skills as standing, walking, pushing, carrying and striking (Broer, 1960: 85-221).

Murray (1963) discussed similar categories but differentiated between locomotor movements such as walking, running, hopping, and jumping and non-locomotor movements such as bending, stretching, twisting, and swinging. Skills such as pushing and striking were considered to be combinations of basic non-locomotor movements. Adapted locomotor movements included such movements as rolling and crawling (Murray, 1963: 105-55).

In 1958, Grenzeback investigated the nature and origin of individual differences in human movement by reviewing pertinent research. She approached the study viewing movement on a continuum with moving and not moving being matters of degree. To facilitate the investigation, several categories of movement were isolated. Fine and gross movements were categorized according to their definitude. Manipulative and non-manipulative movements referred

to movement with or without an extraneous object. The intent of the mover was the basic of differentiation among adaptive, expressive, and austistic movement. Adaptive movement was associated with accomplishment of a given purpose, usually that of changing the environment. Expressive movement, as in sport, was associated with doing something not so closely related to daily living skills. Austistic movement was void of any specific intent related to the motor situation, i.e., gestures which sometimes were expressive (Grenzeback, 1958: 18-21).

The latest in a series of attempts to develop a taxonomy for the motor domain resulted in another type of movement classification system. Jewett and associates (1971) classified movement as generic, ordinative, and creative. Generic movement referred to movement processes facilitating development of human movement patterns and including such processes as perceiving and imitating. Organizing, performing, adapting, and refining of skills and patterns was labelled ordinative. And creative movement was said to include the processes of varying, improvising, and composing (Jewett et al., 1971: 34-36).

The previously reviewed category systems were concerned with human movement potential and application. By developing systems, kinesiologists sought to refine and improve scientific study of movement. Although there were differences in terminology and inclusiveness of some cate-

gories, the various systems served similar purposes. Other groupings of movement characteristics resulted in classifications relative to skills, function, and intent; and a taxonomy referred to the attainment, employment, and creation of skills and patterns.

Building on the framework of human movement possibilities were theorists who tended to focus on why man moves in certain ways. Such individuals employed or modified traditional systems, emphasized one element or aspect of movement, or devised their own categories in light of their particular interests.

In the 1800's, Delsarte (Shawn, 1954) attempted to uncover how man moves under the stimulus of emotion. After observing people in myriad circumstances, he devised a system of movement and aesthetics based on his Law of Trinity. It was defined as "... the unity of three things, each of which is essential to the other two, each coexisting in time, copenetrating in space, and cooperative in motion" (Gray and Strasser, 1962: 6). In his treatment of the theorist, Shawn discussed the basic philosophy of Delsarte's work:

> Man carries in his body, as in his substance, the sacred stamp of the adorable trinity. He is, then, a trinity at whose service function three separate and determined apparatuses, whose triple product characterizes three estates, and produces under the empire of inplicity [sic] of phenomena, acts, and relations -- a triple language revealing instinctively the triple causality of his being (Shawn, 1954: 27).

With the Law of Trinity as a foundation, Delsarte employed endless sets of threes to devise his own movement system. Initially, he divided the body and surrounding space into three zones, each of which was broken down into three parts. The zones and parts in which a movement occurred were said to reflect the nature of the movement i.e., head movements were mental. Subsequently, he deduced three movement principles known as the Great Orders of Movement: Opposition expressing physical fate and emotional power; Parallelism, representing weakness; and Succession, describing movements through the body in anatomical sequence (Shawn, 1954: 28).

Still relying on the compound triple, he posed a nine-fold pattern of movement, the Nine-fold Accord, from which evolved his nine laws of motion: altitude, force, motion, sequence, direction, form, velocity, reaction, and extension. An additional trio of balance, poise, and equilibrium added another perspective to his system. And always operating with the Law of Trinity was the Law of Correspondence stating the relationship of physical activity to spiritual function, "To each spiritual function responds a function of the body; to each grand function of the body corresponds a spiritual act" (Shawn, 1954: 32).

Emile Jacques-Dalcroze, a Swiss music educator, worked with a basic element, rhythm, and is credited with the system of Eurythmics, or good rhythm (Findlay, 1962: 7). Although the system was not actually a means of categorizing movement, its inclusion in a discussion regarding movement

theory is valid since the system provided a means for studying a particular phase of the topic.

Dalcroze described rhythm as:

> ... that natural force which incites and vivifies, unifies and repeats our acts and wills, the many nuances of which are shaped by circumstances and the demands of our daily tasks, by the unexpected changes of will and the obstacles of all kinds which we meet at every stage of our advance" (Jacques-Dalcroze, 1930: v).

He maintained that memory is rhythm because telephone numbers, friends' footsteps, and the like are stored in the mind in the form of rhythmic patterns. Thus, he thought the element to be essential in learning. He also considered activities to be rhythmical and rhythm to be a source of pleasure with aesthetic pleasure going hand in hand with motor efficiency (Findlay, 1962: 7).

Dalcroze's study involved utilizing large muscle groups in rhythmical experience and physical coordination referring to bodily acts for the interpretation of rhythmical symbols, developing habits of listening, integrating mind, body, and emotion in rhythmic expression, and stimulating the creative impulse with freedom of expression (Findlay, 1962: 8). Thus, he was concerned with the consciousness of rhythm, which he described:

> The consciousness of rhythm is the power to grasp the relations between physical and intellectual movements and to experience the modifications caused in these movements by the impulses of emotion and thought (Jacques-Dalcroze, 1930: 183).

Dalcroze and Delsarte were two major early contri-

butors to movement theory. A notable theorist of the twentieth century was Laban. Laban and Lawrence (1947) attempted to penetrate the center of man's effort in art and industry. The idea originated from a study to increase one's enjoyment of work. As a result of their investigation, they found movement to be both functional and expressive and that an individual's efforts are visibly expressed in his movements (Laban and Lawrence, 1947), (Gaumier, 1962), (Thornton, 1971).

Laban's major contribution was his category system. Within the system, movement is composed of factors which are combined in different ways according to values to make unique patterns of movement (Gaumier, 1962: 11). The two major components are shape and effort. Shape involves the organization of space and "... is the visible symbol of man's ability to formulate and conceive relationships of forms"(Gaumier, 1962: 12). Concrete shapes are the actual shapes the body can create and abstract shapes are those spatial patterns created by the moving body.

Effort is the content of movement giving it expression. It is composed of four motion factors: weight, time, space, and flow. Each factor possesses two subdivisions respectively being strong or light, sudden or sustained, direct or flexible, and bound or free. By combining the factors, Laban derived eight different types of movement or effort themes; slash, press, wring, punch, glide, dab,

float, and flick (Laban and Lawrence, 1947: 15).

This rather complex system signifies the expression of man's movement and penetrates the nature of the human being much as Einstein's $E=mc^2$ concept penetrates the nature of the universe (Gaumier, 1962: 11). As illustrated, Laban's theories were "... aimed at stimulating an awareness and appreciation of the reciprocal link between body and mind as it is displayed through movement" (Thornton, 1971: 1).

While Laban offered insight into movement from an individualistic framework, Hall (1959) approached the subject on a cultural-societal level. Through his research, Hall proposed a theory of proxemics describing man's use of territorial space. He suggested that the way man moves in zones of intimate, personal, social, and public distance influences man's ability to relate to people.

Probing into another area of body language resulted in a theory of kinesics, the study of communicative bodily motion, and in its related notational system categorizing movement. After isolating patterns of non-verbal communication, Birdwhistell (1970) specified the following modes of movement behavior: (1) unilateral-bilateral, referring to side, not merely handedness, favored in performance; (2) specific-general, concerned with the utilization of one area for most kinesic activities; (3) rhythmic-disrhythmic, associated with adaptation of a definite rhythm; (4) grace-

ful-awkward, concerning a continuum of movement interruption; (5) fast-slow, referring to velocity; (6) integrated-fragmented, concerning harmonic organization of body parts; and (7) intertensive-intratensive, concerning stimulation from and responsiveness to others and emphasis on autostimulation (Birdwhistell, 1970: 215-16).

Birdwhistell's system of kinegraphy divided the body into eight major sections used to identify movement patterns accompanying speech. Movements and gestures were categorized into kinemics or styles, i.e., a head nod. Kinemics were combined to form kinemorphs which, when "... analyzed, abstracted, and combined in the full body behavioral stream..." (Birdwhistell, 1970: 101), formed complex kinemorphs analogically related to words. And finally, through syntactical arrangement still under investigation, the complex kinemorphs exhibited many of the properties of the spoken language (Birdwhistell, 1970: 215-16).

The literature suggested that the moving body is dynamically involved in all observable behavior which appears to be an integration of movement's motoric, affective, and cognitive nature. H'Doubler summarized the relationship:

> ... Action implies a desire (emotion) which prompted it, a thought (intellect) which shaped it, and a visible movement of physical body to carry it out. That is to say, a desire stimulates a thought, and the thought embodies itself in an act (H'Doubler, 1968: 89).

Conceptual and Perceptual Factors.

Meanings. To introduce plausible hypotheses explaining sequentially integrated aspects of movement, theorists frequently referred to definition, evolution, and potential of the mind. Winter contended that the mind is that which enables man

> ... to engage in activities above those of survival on a sensorial level. The ability to think, to act, and react in a self-directed manner, to communicate personal thoughts and feelings to others through verbal response, through movement, through some other given medium, constitute our cortical endowment (Winter, 1955: 2).

H'Doubler believed that the mind does not merely exist, but that it evolves out of behavior, is the conscious reaction to environment, develops from experience, and elevates abilities (H'Doubler, 1967: 46). Thus, it is an organization of impressions, intuitions, and beliefs which interprets experience (H'Doubler, 1968: 71). She described the power of the mind as "... the degree of strength of the stimulative and regulative processes which follow upon perception of a stimulus," and considered its significance in respect to the nature of expression:

> ... experiences that have not been sufficiently perceived will contribute little or nothing toward expression. What has not been impressed cannot be expressed (H'Doubler, 1968: 71).

Much of what H'Doubler discussed agreed with comments by Blake, Ramsey, and Moran. They suggested that perceptual activities are woven from currently meaningful

and significant experiences, the integration of which are conceptually represented in forms of beliefs, attitudes, and so forth (Blake, Ramsey, and Moran, 1951: 7).

Laban stated, "All our sensations are variations of our unique sense of touch," i.e., sound waves pressing on eardrums, light waves on retinas (Laban, 1966: 29). And since he maintained that mental responses are triggered by sensations, he believed that the kinesthetically perceived sensations of movement possess the ability to stimulate mental activity.

The pervasive reference to perception, involving all sensory systems was reiterated by Arnheim, "No thought processes seem to exist that cannot be found to operate, at least in principle, in perception" (Arnheim, 1969: 14). On that basis he categorized thinking according to the mode of perception: visual perception is visual thinking, auditory perception is auditory thinking, and kinesthetic perception is kinesthetic thinking. Arnheim's equating perception to thinking is constiguous to theories of meaning based on symbolization.

In An Essay on Man, Cassirer (1944) developed a theory of symbolic transformation to explain how man finds meaning in reality. Within his theory, he suggested that man's perceptions are symbolized as ideas, concepts, and thoughts which are verbally expressed in art, myth, religion, and language forms.

Langer, in Philosophy in a New Key, stated that man's interest in the mind has turned to the "... uses of sense-date, the realm of conception and expression" (Langer, 1951: 33). Similar to Cassirer, she believed symbolization to be one of man's basic needs and a fundamental process essential and prior to thought (Langer, 1951: 45). Furthermore, meaning is extricated via the thought processes formulated by sense perceptions:

> All thinking begins with seeing; not necessarily through the eye, but with some basic formulations of sense perception in the peculiar idiom of sight, hearing or touch, normally of all the senses together. For all thinking is conceptual and conception begins with the comprehension of the Gestalt (Langer, 1951, 224).

Langer recognized language to be the single means of articulating thought and contended that everything not speakable thought is feeling (Langer, 1951: 81). She also realized that idea and thought are overtly expressed by man, but that verbal symbols are unable to articulate some feelings and emotions. Thus, rather than limit the theory of symbolic transformation to verbal forms, she expanded it to explain the meanings in rite, religion, painting, music and all art forms.

Finding Langer's theory applicable, Ellfeldt and Metheny (1958) elaborated on it in terms of movement. They reasoned that kinesthetic perceptions are much like other sensory perceptions and, therefore, should be subject to the same processes of symbolic transformation. Considering movement to be a symbolic form, they hypothesized that man

conceptualizes about and makes sense out of his kinesthetic perceptions of movement "... by philosophizing about them within the context of his own structure of human meanings and values" (Ellfeldt and Metheny, 1958: 264).

Paralleling Langer's reference to structure, concept, and symbol, Ellfeldt and Metheny developed a new vocabulary to facilitate communicating about their movement theory. Kinestruct "... refers to the dynamic somatic form created by the structural masses of the body in motion". Kinescept "... refers to the identifiable sensory from created by kinesthetic perception of the kinestruct". And kinesymbol "... refers to the meaning of symbolic import the kinescept-kinestruct has for the person within the sociopsychosomatic context of the situation" (Metheny, 1965c: 115).

On numerous occasions, Metheny elaborated on the theory stressing its significance in understanding movement. She constantly emphasized the fundamentality of the process in man's understanding reality through movement. In discussing the nature of meaning, she noted that symbolic forms of meaning can be private, as in concepts, ideas, and thoughts, or public, as in the expression of that meaning. When the form is publically expressed through movement, the kinestruct is also the kinesymbol. In reference to public forms, she stated:

> ... Human activities, i.e., activities characterized by human thought, are the expressions of the meanings men find in the thoughts that symbolize their intellectual comprehension of

reality (Metheny, 1965d: 58).

Although unique in developing a theory of movement based on symbolic transformation, Ellfeldt and Metheny were among several taking cognizance of the process. Hawkins said that the process is a basic need through which man clarifies and integrates his experiences (Hawkins, 1967: 10). Sheets concurred, emphatically stating that the meaning aspect of a symbol is derived from the specific sensuous surface embodying and reflecting it. Therefore, the sensuous surface is, from Sheets' perspective, "... the sine qua non of specific meaning reflectors" (Sheets, 1966: 81-82).

Laban, like Langer and Metheny, believed that meaning may exist despite the fact that it may not always be verbally expressed or interpretable. However, he did believe it possible to determine the significance of observed movement. He suggested that mechanical movement lacks inner motivation, purely expressive-impulsive movement has the release of feeling as its only concern, and symbolic movement involves transformation of experiences into highly significant movement (Gaumier, 1962: 14). He also theorized that in movement trace forms and dynamic sequences, similar to Metheny's kinestructs and kinesymbols, express state of mind and meaning of movement:

> Movement is man's magic mirror, reflecting and creating the inner life in and by visible trace-forms, and also reflecting and creating visible trace-forms in and by the inner life (Laban, 1966: 100).

Emotions and feelings. Theorists agreed that movement may be meaningful. They also concurred that a movement experience is capable of expressing and is often influenced by emotion and feeling. Delsarte's (Shawn, 1954) theory was based on the relationship between motion and emotion. Specifically, "Emotion produced bodily movement, and if the movement was correct and true, the end result of the movement left the body in a position which was also expressive of the emotion ..." (Shawn, 1954: 11). He further implied that moving in a specific emotional way could leave the mover in that particular emotional state.

To clarify his point of view, he labelled the head as the mental, intellectual zone; the torso as the emotional, moral, and spiritual zone; and the limbs as the vital, physical zone. He then stated how the different mental states were outwardly expressed: power to movements from a center giving opposition in gesture, wisdom toward a center giving precision, love with or around a center, and emotion flowing through the body (Shawn, 1954: 60).

Laban's theory resembles Delsarte's in a number of ways, including its treatment of emotion. Considering movement in terms of its emotional expression, Laban stated, "One of the basic experiences of the dynamics of movement is that its spatial nuances always show clearly discernible mental and emotional attitudes" (Laban, 1966: 27). Thus, movement has different degrees of inner participation and

intensity. After observing man in action, Laban, too was able to match movements and emotion, i.e., quick, sudden, backward movements exhibited fright (Laban, 1966: 31).

Hunt verbalized the relationship between emotion and feeling stating that "... man's emotional energy is made up of both feeling and directed or expressed emotion" (Hunt, 1964: 81). On the basis of her observations and research, Hunt found that different kinds of emotions produced different kinds of movement patterns dependent upon the manner in which the emotion is interpreted. For example, fear may be expressed in fast or slow movements depending on whether one's fear caused hiding or submission. She also found that different emotions produce muscle tension in different body locations, i.e., anger and hostility in arm and shoulder regions. And she credited sudden changes of flow in sport as the possible result of rapid shifts of internal affect and external expression of emotion (Hunt, 1964: 78-81).

Believing that man cannot isolate himself from emotional forces because they are basic, deep-rooted, useful forms of behavior, H'Doubler stated:

> ... Because of the inescapable relation between feeling and movement, knowledge of the emotional nature can be gained through the study of movement as a medium of creative experience and expression (H'Doubler, 1968: xx).

Like Langer and Metheny, she believed movements to be motor symbols of action with line, speed, force, and other movement factors being expressive of a vague way of feeling

(H'Doubler, 1968: 140).

H'Doubler described emotion as "the awareness of the body's readiness for action, a tension caused by deep-seated physical changes..." (H'Doubler, 1968: xx), and contended that awareness of an emotion is preceded by perception of an event and recognition of its worth in terms of its meaningfulness or meaninglessness.

The literature suggested that emotions and feelings are related and that emotions affect and are affected by movement experience. Yet despite their relationship and mutual association with movement, they differ. Arnold differentiated between the two stating that "... feelings are experiences of mild intensity while emotions imply that we are strongly moved" (Arnold, 1960: 19).

Feelings represent individuals' reactions to sensations and perceptions, function in the service of biological regulation, and accompany streams of experience changing with changes in stimulation. Emotions, on the other hand, have definite beginnings, run characteristic courses, are affective experiences with figure character, and refer to persons and situations. Thus, feelings are emotional colorings of conscious contents indicating reactions to objects, while emotions have a different figure reference by actually going out to an object or situation (Arnold, 1970: 234-235).

In considering feeling as a topic separate from

emotion, the literature revealed different connotative meanings for the word feeling. This led to confusion over the exact nature and state of feeling. Metheny stated that meaning in movement is conveyed by an individual in terms of how it feels kinesthetically and emotionally (Metheny, 1965a: 65). Thus, feelings appear to have physical and psychological emphases. Feelings may refer to sensate experiences and/or feeling states prior to and during movement as well as to those produced as a result of the movement experience.

Sheets recognized expressive form to be symbolic form because of its congruity with forms of feeling. Therefore, she believed forms of expression to be forms of feeling, with some feelings having many different forms (Sheets, 1966: 6, 184).

Pursuing the existential function in physical education, Slusher (1964) suggested that an individual's feelings are symbolically portrayed in movement, and so movements may indicate man's unconscious. Kaelin's concern paralleled Slusher's in that expressed feelings are body movements, not symbols of movement. He further stated that feelings can be described as spatial-temporal coordinates defining force (Kaelin, 1964:91).

Langer suggested that feelings of life emanate from a "... groundwork of body feeling and sensuous orientation, and a sense of personal activity" (Langer, 1968: 19). H'Doubler stated that movement sensations alone have no

feeling; there exists an affective phase which is the perception of the sensations and feeling states and ideas aroused by them (H'Doubler, 1968: xxi). She saw in life a foundation for associations between the two influences and affects the feelings and activities respectively. The feelings are mental states connected with situations stimulating activity "These feelings", H'Doubler said, "which have become definitely associated with arousing situations, call for action or outward expression" (H'Doubler, 1968: 117).

Feelings can assume many forms, as Sheets (1966) suggested. However, pleasant and unpleasant feelings are those most often referred to in the movement literature. According to Langer, feelings of life cannot be put in discursive form any more than symbolic meanings can be. Instead, feelings' realm is that of inward experience taking in such things as pain, pleasure, every movement of pleasure and displeasure (Langer, 1968: 18).

Langer's thesis was supported by Arnold's which considered pleasure to be the extreme of pleasant feelings and pain the extreme of unpleasant feelings (Arnold, 1960: 19). Thinking of feelings as a reaction to sensory experience, Arnold commented:

> ... When we find it pleasant to sing, dance, or skate, we refer to the way our movement feels; we react to kinesthetic sensations that go with it. If we could move without having any sensation of moving, there would be no pleasure attached to it (Arnold, 1960: 70-71).

Moreover, pleasure is experienced when something affects an

individual favorably, and since people are unique, pleasure is a very individual matter (H'Doubler, 1964: 61).

Also concerned with the polar relationship of feelings was Lowen (1970), who devoted a significant portion of his book, Pleasure, to the topic related to movement. He viewed pleasure and pain on a continuum with pain having a substantial quality, the degree of which is associated with the intensity of the noxious agent; and with pleasure being insubstantial and possibly greatly dependent on one's mood (Lowen, 1970: 31).

Perceiving pleasure as a state caused by body movements flowing freely, rhythmically, and harmonically with the environment, Lowen mentioned bioenergetic theory relying on the functional identity of the body-mind. The principles state that changes in behavior and feeling are based on functioning of the body, especially breathing and movement. Pleasure is rhythm and rhythm is pleasure. Whether one feels pleasure because of rhythmical movements or whether movements are rhythmical because of pleasure is irrelevant (Lowen, 1970: 220). The bioenergetic theory is in some ways reminiscent of Dalcroze's emphasis on rhythm.

When exploring the topic of feelings, especially in terms of pleasure and pain, the literature suggested that aesthetic experience is a factor to be considered. Smith, who believed aesthetics to be based on perception, commented:

> ... The farther up on the aesthetic continuum is our organization of the movement pattern we are performing, the more unity of "feeling" we receive from our motions and the more pleasurable is the experience (Smith, 1968: 63).

According to Lowe (1971), aesthetics is based on the pleasure principle. However, Langfield qualified Lowe's statement noting that not all pleasure is aesthetic (Langfield, 1967: 34). He stressed that appreciation of beauty is an important, fundamental reaction of the mind and that a sense of beauty is vital to the complete existence of man (Langfield, 1971: 3-4).

Hawkins concurred believing that human nature causes man to seek aesthetic experiences. Man "... needs to have rich sensory responses which we associate with qualities and feelings" (Hawkins, 1967: 10). And H'Doubler said that to feel pleasure and aesthetic pleasure are very human capacities and are prevalent in daily lives (H'Doubler, 1968: 111-12). She offered support for Hawkins's concern for the sensorial characteristics of aesthetic experiences:

> ... The aesthetic response is basically sensorial, even though it may be overlaid and integrated with intellectual components of taste, preference, and discrimination based on conceptual knowledge (H'Doubler, 1967: 46).

It has been suggested that when one adjusts to a situation in such a way that his responses take an integrated form of action, the situation is called beautiful, and the accompanying feeling aesthetic pleasure. Fundamentally then, aesthetics is a science concerned with beauty and

ugliness, and an aesthetic concept is generally accepted as the "... utter absence of utility" (Langfield, 1967: 45). Reid, however, suggested that if an expression which is automatic is repeated for "... the sheer joy of expressions," then it has become aesthetic (Reid, 1938: 144).

The literature mentioned other factors determining the degree of pleasure and aesthetic quality of an experience. The degree of difficulty adjusting to a situation is one such factor. Langfield suggested that too easy an adjustment as well as too difficult an adaptation can be unpleasant (Langfield, 1967: 278). Similarly, Arnold considered easiness of a situation as a factor influencing pleasantness. However, she referred to ease and effortless in smooth and efficient functioning as opposed to ease of achievement alone (Arnold, 1960: 71). Thus, the aesthetic experience in movement appears to be an individual one based on the mover's unique criteria for beauty.

In summary, movement was projected as essential to and inherent in man. Meanings, feelings, and emotions were recognized as intrinsic features of behavior. Man was described as a functioning, integrated being possessing unique qualities and characteristics reflected partially by his values. Consequently, it seems logical to assume that the interaction of these innate propensities would result in a relationship between aspects of personality and specific movement preference.

MOVEMENT PREFERENCE AND PERSONALITY

The relationship between movement preferences and personality has received much less attention than movement, preference, and personality considered singly. Nevertheless, scattered references and broad generalities of the individual theories allow for plausible interpretations reflecting the theorists' main emphases.

Movement preference, considered in terms of perception, may be explained by the personality theories developed by Lewin and Rogers. Lewin's field theory describes the attractiveness of an object or situation in terms of positive and negative valences directing behavior. Since the perceived attractiveness is affected by the total field, the object or situation is considered an integral part of the entire experience (Lewin, 1951). Forces instrumental in personality development may be responsible for reactions to movement which result in preferences. In Rogerian terms, movement may be one means of attempting to actualize, maintain, and enhance the self (Rogers, 1951). Perceiving that specific movements may fulfill one's needs might stimulate preference for those movements.

Differences in movement preference may be explained by differences in perception. It has been recognized that each individual perceives differently and that the way his perceptions are interpreted dictates his reaction to the stimulus configuration (Blake, Ramsey, and Moran, 1951: 10). Murphy stressed, "If we understand the differences in

perceiving we shall go far in understanding the differences in resulting behavior" (Murphy, 1947: 23). Likewise, movement preference differences may reflect differences in the way movements are kinesthetically perceived. Thus, Murphy's canalization process concerned with the fulfilling of sensory and activity needs may have meaning for movement preference explanation. Murphy also considered style and rhythm to be aspects of personality development. Perhaps they, too, elicit movement preferences in relation to personality structure (Murphy, 1947: 162, 641).

Blake, Ramsey, and Moran stressed that perceptual activities are woven from one's currently meaningful and significant experiences, the integration of which is conceptually represented as beliefs, attitudes, hypotheses, and selector tendencies (Blake, Ramsey, and Moran, 1951: 7). This implies that preference may be the result of conceptualization of kinesthetic perception and is, in part, a result of sensately experiencing situations.

The four functions associated with Jung's self-actualization process lend support to the previously reviewed conjectures. His theory suggests that sensation and intuition are irrational functions serving together to transmit perception unconsciously. Rational functions allowing for impartation of value, i.e., likes and dislikes, are feeling and conceptualization of presentations through thinking (Bischof, 1971: 129-38). Together, all four may allow

for the awareness and transportational processes necessary in preference determination.

Similarly, Metheny asserted that conceptualization of kinesthetic perceptions is a significant contributor to the development of movement preferences:

> ... the fact that we can identify the distinction between "like" and"dislike", between "enjoy" and "annoy", in our kinesceptual experiencing of our kinestructs demonstrates that those kinescepts do have meanings which are implicit in the perception of such (Metheny, 1965c: 116).

In addition, habitual postural kinestructs can be considered kinesymbolic expressions of personality in that they reflect drives, motivations, and self-interpretations (Metheny, 1965b: 96).

Also focusing on conceptualization was Hunt, who conjectured that meanings inherent in movement may explain why an individual seeks some movements and avoids others. At one point she remarked, "The activities and movements that we don't like to do accentuate sensations and feelings in the body which are not particularly comfortable" (Hunt, 1968: 63). She also stated that movement likes and dislikes influenced by associated concepts may explain why some physical educators do not like to dance and dancers prefer not to move with objects in their hands even though comparable movements are executed by both movement groups. Briefly, Hunt considered changes happening biologically and conceptually fundamental to choices people make in movement

(Hunt, 1968: 63).

One aspect of Freud's theory especially pertinent to movement preference is the contention that pleasure is a primary motivator of man (Freud, 1955). If this is so, then movement preference may be due to pleasurable sensation aroused by movements or pleasurable meanings and satisfactions attained as a result.

It has been maintained that man is "... biologically structured for pleasure, not efficiency" (Lowen, 1970: 222). According to Lowen, man has unlimited rhythmic patterns corresponding to different moods and desires. These rhythmic patterns change as excitement changes; therefore, patterns can be woven to increase pleasure. Lowen attributed pleasure in sport to rhythmical qualities of the movements involved and suggested that the big role sports play in peoples's lives hinges on the fact that rhythmical qualities in daily activities have been usurped by machines (Lowen, 1970: 222).

In discussing pleasure, Winter referred to the Yiro Hirn and Helge Lundholm theory that pleasurableness of form might prompt reproduction of that form. She theorized that repeated experience might have prompted primitive man to develop an aesthetic attitude of appreciation also familiar in this era (Winter, 1955: 2).

Maslow's theory might be interpreted to support such an hypothesis. The theory suggested that aesthetic needs

are among those hiearchically ranked needs man attempts to fulfill. Among such needs may be "the needs for order, for symmetry, for closure, for completion of the act, for system, and for structure..." (Maslow, 1970: 51). Thus, man's movement preferences may be based on the attainment of aesthetic pleasure.

H'Doubler stated that acts which reflect sensation, volition, and choice occur through the stimulus-response mechanism of the nervous system; and that preference involves instinctive, immediate, and pleasurable judgments (H'Doubler, 1968: 71, 114). In considering movement preference from an aesthetic point of view, she reasoned that things appear beautiful when they have value, but that beauty is not a quality of an object but a quality of the individual's manner of experiencing it (H'Doubler, 1968: 112). These differences were also explained by Langfield, "So long as human personalities differ, just so long will there be sorts of degrees of beauty" (Langfield, 1967: 281). Within his statement, Langfield went beyond suggesting the existence of a relationship by implying causality.

Lowe described aesthetic as "... a feeling of elation or a sophisticated intellectual appreciation in response to witnessing the beautiful" (Lowe, 1971: 14). The aesthetic in sport is dependent upon personal preference for a sport and not necessarily generalizing across all sports on an individual level (Lowe, 1971: 11).

Kellogg presented an interesting approach to biological aesthetics of art. She contended that taste for what she called beautiful art is built-in and acquired during the pre-school years "... by the self-directed process of making directional lines of movement in pleasing combinations", and later in life cultural influences cause individuals to substitute or superimpose learned tastes on "... biologically endowed natural taste", creating adult preferences (Kellogg, 1963: 11). Perhaps the development of movement preferences follows similar biological and cultural patterns.

Erikson's (1950) emphasis on social-cultural factors, including the passing on of values, lends theoretical support to the movement preference-personality relationship. The manner in which an individual handles Erikson's eight dimensions of development to achieve status may well include preferences for particular movements.

Horney stressed that society is responsible for providing a suitable social climate necessary for a person to avoid developing neurotic tendencies. Considering that "... the entire emphasis falls on the life conditions molding the character" (Horney, 1939: 9), environmental influences may mold one's movement preferences. Also, movement preferences may reflect an individual's manner of coping with basic anxiety. Horney implied that "... the strategies for doing so may become relatively permanent

fixtures in the personality" (Sawrey and Telford, 1967: 375).

Perhaps man chooses to move in set ways in a conscious or unconscious attempt to overcome feelings of inferiority. If this is so, Adler's (1964) position may be an appropriate one from which to explain personality manifested in movement preferences. Preference may be part of a life style resulting from a combination of environmental forces and self-driven and self-dictated directions of behavior.

Allport contended that personality develops through the interplay of physique, intelligence, and temperament (Bischof, 1970: 290). Thus, one's movement capabilities, conceptualizations, and mood may determine one's movement preferences. In turn, preference may be related to personality by functioning in its development.

Sheldon's work in somatotyping lends support to the interplay of physique and temperament influencing movement tendencies. Sheldon found endomorphs relaxed in movement, slow to react, and exhibiting even emotional flow. Mesomorphs appeared stronger, more assertive, indifferent to pain, and enjoying challenge and risk. And ectomorphs possessed restraint in movement, overly fast reactions, and preference for the open space (Sheldon, 1942: 24-94, 370-410).

Thornton stated, "Laban's perspective of movement

was based on the belief that it is the visible representation of man's personality and inner attitude" (Thornton, 1971: 115). Individuals have numerous efforts coming naturally or easily to them. The efforts utilize space in certain ways and directions more naturally taken. The movement efforts are combined according to values to make unique patterns (Gaumier, 1962: 11). Individual expressiveness and taste are among those factors possibly influencing conception of harmony in movement; and this is a question of individual temperment (Laban, 1966: 23).

Dewey also believed an individual's style is "... an innate movement endowment, which, through his life, tends to be his preferred way of work or behaviour [sic] in bodily action and bodily expression" (Dewey, 1962: 23). After completing case studies, Hunt offered the following conclusions:

> ... effort limitations and proclivities generally predict movement behavior and the level of specific skill that can be expected. They tie in closely with personal movement likes and dislikes (Hunt, 1964: 72).

There have been some investigations into movement tendencies and preferences. Some focused primarily on preferences, while others considered personality as an added variable. Some early investigations into relationships between movement characteristics and personality utilized handwriting and gait as movement variables. Downey evaluated speed, tension, persistence, flexibility, and forcefulness

in handwriting. As a result, she suggested that an individual's temperament might be determined by analyzing movement characteristics. Thus, she proposed six movement types and their accompanying temperament tendencies (Downey, 1923: 339). Although her system was not subjected to statistical analysis to determine validity and reliability, it represented one of the first attempts to match movement and temperament.

Wolff stated:

> ... the study of the expression of personality can be centered upon any or all of the different channels in which personality may become manifest. Expressive behavior embraces an individual's actions in response to different internal and external stimuli, his handling of objects, and the postures of his body (Wolff, 1943: 18).

He suggested that the expressive value of gait is that it expresses one's attitude toward the world. After studying the structure on subjects' gaits, he equated stooping gait, sauntering, and brisk lifting of the feet with introversion, non-chalance, and optimism, respectively. Thus he concluded that the description of the observable gait closely corresponds to personality description -- a correspondence that he considered likely since both gait and personality are dynamic. However, he saw different spheres of personality dominant in different expressive forms, with the emotional sphere prevalent in gait (Wolff, 1943: 91-92).

In Studies in Expressive Movement, Allport and Vernon (1933) stated that movement has non-expressive and expressive phases, the latter including peculiarities in

in steadiness, pressure, precision, and patience. Among idiosyncracies in the expressive phases were rhythm factors including preference for quick or slow time, syncopated or gliding movements, and large or small steps determining rhythm (Allport and Vernon, 1933: 33).

One of Allport and Vernon's focal points was the self-consistency of specific acts. A variety of speed, pressure, and other assorted tasks were repeated over periods of time and by different muscle groups. It was found that acts repeated at a later time are essentially the same as the first execution. Moods play some role in determining movement consistency. Performances of single tasks are not specific to a single part of the body. There is no general speed factor or psychic tempo among individuals, although there is a high degree of consistency in specific needs. And handwriting is a highly consistent means of expression (Allport and Vernon, 1933: 176-77).

The investigators were able to identify stable, self-consistent, independent, and psychologically meaningful movement factors: expansive, based on the amount of space used in performing acts; centrifugal, indicating whether a subject typically moves toward or away from himself as he performs; and emphasis, identifying the amount of force and tension present in the performance (Allport and Vernon, 1933: 176-78). Based on the results, it did not seem unreasonable for Allport and Vernon to assume the following:

> ... insofar as personality is organized, expressive movement is harmonious and self-consistent, and insofar as personality is integrated, expressive movement is self-contradictory (Allport and Vernon, 1933: 182).

Studies such as the ones reviewed preceded a number of other investigations of movement preference regarding factors of space (Cratty and Williams, 1966), (Lewinson and Zubin, 1942), Brengelmann, 1961); time (Harrison and Dorcus, 1938), (Rimoldi, 1951); and speed (Lewis, 1933), (Dinner et al., 1963), (Eysenck, 1964), (Rimoldi, 1951). After reviewing the mentioned studies, the writer was inclined to agree with Cratty (1967) that the findings are inconclusive regarding specific movement preferences due to a variety of approaches and/or weak research designs.

In 1958 Grenzeback reviewed pertinent literature in order to answer the question, "Are an individual's movement responses stable characteristics of that person?" (Grenzeback, 1958: 134). She found the data indicating that repeated motor responses are fairly stable; tempo and general motility are stable but conditioned by subject, age, and motor activities measured; and there may be consistent style of movement permeating responses of the sequential and repetitive nature (Grenzeback, 1958: 135).

To determine personality characteristics, Taguiri employed a method of person perception. The technique involved observing and analyzing "... the displacement through space of the entire stimulus person..." (Taguiri, 1960: 176).

Subjects described the personality and character of people moving in various paths at constant speeds. Subjects also listened to personality descriptions of people and drew paths they thought would correspond to movement paths taken by individuals fitting the verbal descriptions. Taguiri felt that the wide range of responses and interpretations showed "... how readily we infer from the simplest physical aspects of behavior to some of the most inner qualities" (Taguiri, 1960: 181). He also contended that psychological geometry corresponds to actual geometry and that a path has a meaning exclusively dependent upon its shape (Taguiri, 1960: 185-90). In conclusion he stated:

> ... The importance of free movement as a cue derives, then, from the fact that it represents the essence of the unique functional relationship between the person and his field. Since, in ordinary life, the observer is usually fairly well informed about the field conditions, as well as about some of the characteristics of the person, the path of movement affords an excellent source of information about the "inner state" of the person moving (Taguiri, 1960: 194).

Research into movement styles and preferences was undertaken primarily from the psychologists' perspectives. Although the results were rather inconclusive, there was some evidence to suggest that personality is visibly expressed in movement and that an individual's movement inclinations demonstrate consistency. If so, one might conclude that these tendencies and expressive characteristics reflect preferences for specific kinds of movement,

not only in daily skills, but also the realm of physical education activities.

Unfortunately, little research has been done on the latter topic. Most of the studies centering on personality and physical education investigated emotional traits of athletes. Under examination were personalities of athletes of different skill levels in one activity (Kroll, 1967); athletes in individual and team sports (Thune, 1949), (Peterson, Weber, and Trousdale, 1967), (Singer, 1969); athletes and participants in assorted activities (Lakie, 1964), (Flanagan, 1951) respectively; athletes and non-athletes in assorted activities (Slusher, 1964); and athletes and non-athletes in individual and team sports (Sperling, 1942), (Booth, 1955).

Despite assorted research designs and their conflicting results, certain trends did emerge. Differences found between any groups rarely occurred on the whole personality profile. Most appeared when individual traits and scales were subjected to factorial analysis. Generally, there seemed to be some significant differences in personality factors between subjects in different physical activities and between athletes and non-athletes, but few differences existed between groups with varying skill levels.

Since the activities differed in several respects and subjects elected to participate in the respective

sports, it was assumed that the subjects' choices represented some degree of preference. Therefore, the results were interpreted to indicate an existing, but not causal, relationship between aspects of personality and activity preference. However, specific movement patterns and skills demanded by particular activities were not the only variables in sports. Consequently, any existing relationship between personality and activity preference was not sufficient evidence to conclude that personality and movement preference were related.

Hubbard (1961) investigated the phenomenology of kinesthetic perception in relation to certain measure of movement capacity. Subjects moved in response to triple movement cues of speed, path, and force dimensions, and rated their responses as natural, strange, or neither, and liked, disliked, or neutral. Ratings were compared with accuracy in conforming to movement definitions within the cues and with variety of responses.

She found that movement provoked expression of feeling and distinct imagery; and a central theme was developed from response to response. There was no consensus as to what cues provoked what rating and there was little consistency in response; but most comparisons in the distribution matrix evidenced themselves as natural-like, neither neutral, or strange-disliked.

Although the study did not directly investigate personality, it did reveal a relationship between movement

likes and dislikes and the sensual, emotional, and philosophical overtones of movement. Therefore, the findings support theoretical statements regarding the significance of perceptual and conceptual aspects of movement; and they also provide a basis for the presupposition that personality, as expressed in feelings, emotion, and meanings, is related to movement preference.

In 1967, Houston remarked, "No studies directly investigating the personality correlates of preference for movement quality and form comparable to those for elements in other expressive media exist" (Houston, 1967: 4). Consequently, she investigated personality, as measured by Catell Sixteen Personality Factors, in relation to two aspects of movement behavior: reaction to one's own movement and observation of movement as a projection of inner attitude and personality structure.

Subjects took part in structured movement improvisation after which they wrote their immediate and reflective responses to their movements. Tapes of the movements were then rated by inexperienced judges. At the ten per cent level of confidence, five personality factors were significantly revealed through movement and accurately rated by the judges. Positive reactions to the movements were associated with emotional stability and conscientiousness, and negative reactions were affected by feeling and expediency. More specifically, compilation of the subjects' interpreted

responses cited for movement preference including quality of the stimulus-object, quality of the movement itself, movement control, self-consciousness, subjective awareness of affective responses due to emotional release, what the object or movement symbolized, and familiarity with the object, to name a few (Houston, 1967: 123).

Houston concluded that since personality factors were positively associated with objects liked best, logically a relationship between personality structure and mode of response might exist. Also, the fact that subjects liking and disliking certain movements possessed common traits suggests that other individuals of the same type might exhibit similar responses (Houston, 1967: 121, 143).

The implications of Houston's findings are that personal movement tastes might be potential determinants of value discovered in physical education activities. These implications, coupled with the paucity of relevant factual material, warrant further investigation into the relationship between personality and preference for specific kinds of movement in physical activity.

CHAPTER IV

PROCEDURES

PURPOSE

The purpose of this study was to investigate the interaction of personality and movement preference. Primary explorations examined relationships between personality and preference for non-implement and implement movement patterns of eight basic effort themes. Subsequent explorations delved into personality and movement preference differences between dance and sport groups.

SELECTION AND DEVELOPMENT OF MOVEMENT PATTERNS AND INSTRUMENTS

Movement Patterns

Feel "... is perhaps the finest achievement of the union of motion and emotion" (Laban, 1966: 124). Laban and Lawrence agreed that one must execute a movement to appreciate its full power and meaning, and that getting the "feel" of a movement allows for real understanding.

This research studied the individual's preference for movement. Thus, based on the literature and empirical judgment, the investigator believed the results of this study would be more valid and meaningful if the subjects responded to movements they actually performed.

Criteria for development. Preference for each movement pattern was indicated on a semantic differential questionnaire, an instrument constructed to judge a variety of selected concepts. Although concepts could have been selected by utilizing a sample analysis, in this study the movement patterns were chosen according to Osgood's suggested method relying on "good judgment" (Osgood, Suci, and Tannenbaum, 1957: 77-78). This technique involved selecting concepts for meanings which anticipated considerable differences, selecting concepts with clear and singular meanings, and selecting concepts expected to be familiar to all of the subjects.

To ensure practical and efficient employment of concepts in this study, the investigator established additional criteria specific to movement patterns. Each was constructed to be unique and distinguishable from the others. Each movement pattern required approximately the same amount of time to be easily learned and executed. The types of movement selected did not favor one group over the other, and each effort theme was represented by one non-implement and one implement movement pattern.

Development and validation. To secure a variety of easily distinguishable and unitary movements, patterns incorporating different emphases and quality were sought. Laban and Lawrence's (1947) eight basic effort themes -- slash, wring, flick, dab, glide, float, punch, and press --

seemed especially adaptable for this study.

A review of the literature revealed that Stanley (1969) and Preston (1963) not only thoroughly explained the composition of Laban's effort themes, but also presented examples of dance and sport skills representing each effort theme. As one means of seeking validity, those examples served as the bases for development of the movement patterns. In compliance with one aspect of this study, each effort theme was represented by two movement patterns, one with and one without equipment.

Written descriptions of the sixteen patterns were compiled. Copies were distributed to five judges, who were dance and/or physical education teachers enrolled in graduate courses at the University of North Carolina at Greensboro. Their teaching experience ranged from five to fifteen years, averaging more than nine years. There was a three to two dance/sport ratio, and all the judges were knowledgeable and experienced with Laban's analysis of movement.

Each judge was asked to indicate on paper whether or not each of the patterns was an accurate example of the effort theme for which it had been constructed. The judges were encouraged to include on the questionnaires movement pattern suggestions which they believed more desirable than the originals in terms of accuracy of representation and ease of execution.

Within three days of distribution, the questionnaires

were returned. Positive responses were indicated as "yes" answers. Negative responses were related to nebulous wording of descriptions or failure on the writer's part to indicate the major point of emphasis in the pattern and were indicated as "no" answers. The major point of emphasis should have been indicated because most movement patterns incorporate more than one effort action. Thus, the particular effort which was to be considered within each pattern needed to be pointed out to the judges and, eventually, to the subjects.

The decisions and suggestions were compiled. Where disagreements existed, these movement patterns were discussed with the judges and sometimes altered according to their suggestions in an attempt to achieve a minimum of eighty per cent agreement by the judges on each movement pattern. Final tallying yielded unanimous agreement on six patterns and eighty per cent agreement on the other ten. Copies of the original and finalized movement patterns and the judges' ratings prior to and succeeding finalization appear in Appendices A, B, and C.

Following finalization of the movement patterns, a set of movement pattern directions to be read to the subjects was developed. Pertinent adjectives describing movement were omitted so as not to influence the subjects' responses on the semantic differential questionnaire which relies on polar adjectives to gather information. To avoid

using such adjectives, directions stated that the subjects would execute the movements along with the administrator who would verbally establish a specific cadence.

The order in which the movement patterns were to be executed and rated was determined by a random selection, regardless of effort themes or implement categories. The patterns were labelled alphabetically in the order drawn. A copy of the subjects' directions appears in Appendix D.

Semantic Differential Questionnaire

The semantic differential questionnaire was used to measure preferences for different kinds of movement. It was selected because it is objective, reliable, valid, measures meaning, and purports to be a significant preference determinant. It gathers much information in a short time and the measurement procedures are explicit and can be replicated.

The sample of movement patterns technically referred to as concepts was carefully drawn. Selection considered the clarity of the concepts judged and attempted to augment the amount of information gained from a limited selection. The questionnaire was basically a combination of controlled scaling and association procedures. Therefore, the crux of its effectiveness rested in the sampling of polar adjectives (Osgood, Suci, and Tannenbaum, 1957: 20).

Scale selection criteria. Scales were selected according to criteria established by Osgood, Suci, and Tannenbaum (1957: 78-79). This procedure included selecting a small number of closely related scales to represent the evaluative, activity, and potency factors, and choosing and placing in an unassigned factor category additional relevant scales with less common or unknown factorial composition. The procedure also involved the utilization of scales composed of polar adjectives directly or metaphorically related to the concepts, and representing each factor category by an equal number of scales maximally loaded for the factors represented and minimally loaded for the others.

Selection and validation of scales. In order to be sure that the adjectives in each scale were polar and that they were maximally loaded for the factors they represented, scales whose polarity and factor loadings had been previously validated were utilized. Sources for such scales were lists of polar adjectives validated by Osgood, Suci, and Tannenbaum's three major analyses: Centroid Factorization Method in which Thurstone's Method was applied to a matrix of correlations to select factors; D-Factorization Forced-Choice Method involving choices between pairs of words to indicate the direction of their relationship; and Thesaurus Sampling involving extraction of polar adjectives and testing the description of semantic space (Osgood, Suci, and Tannenbaum, 1957: 33-48).

A series of validation procedures were undertaken to ensure the relevancy of the scales to the concepts to be judged. From the lists of factorially loaded polar adjectives, the investigator selected scales she considered directly or metaphorically related to movement. The scales were sorted and placed into four lists according to their factor loadings. List A contained seventeen evaluative scales; B, fifteen potency scales; C, eleven activity scales; and D, eleven unassigned scales. The unequal numbers of scales in each list were approximately proportional to the numbers of scales in the factor groups from which the original selection was made.

The lists were duplicated and distributed to fifteen, female students enrolled in graduate physical education courses at the University of North Carolina at Greensboro. All the judges were physical education and/or dance majors. Their teaching experience ranged from zero to twenty years, averaging six years. Each subject indicated for each list the seven pairs of adjectives she believed most accurately described movement. Within two days, the lists and choices were returned and tallied by the investigator. For each of the four factors, the five pairs of words with the highest frequency of choice were designated as the twenty scales to be used in the semantic differential questionnaire. In the case of ties, final decisions were made by the investigator. Copies of the adjective lists and total choice frequencies

appear in Appendix E.

Form of the questionnaire. The physical arrangement of the questionnaire took the pattern of Form II (Osgood, Suci, and Tannenbaum, 1957: 82). It was more suitable than Form I for rating a single concept at a time. Each concept could be judged on separate sheets of paper, all of which were identical in ordering and polar direction of scales. The form had greater constancy of meaning for the concept being judged, rendering it more satisfying to the subject. It was easy to mimeograph and score.

The polar adjectives in each scale were placed horizontally across from each other on the page. The semantic space between the adjectives was divided into seven equal sections which were underlined and separated by colons. The twenty scales were vertically aligned. Scales were discreetly placed to prevent possible position preference. They were alternated by factor so that scales representing the same factor were never consecutively placed. Polar directions of the scales, determined by face validity and previous validation (Osgood, Suci, and Tannenbaum, 1957: 33-48), were alternated within each factor as well as vertically among all twenty scales. A copy of the arrangement of scales and weighting of semantic space appears in Appendix F.

The sheets were duplicated and compiled in booklets containing semantic differential questionnaire directions,

and sixteen identical pages of scales. There was one page of scales for each movement pattern concept. At the head of each page was the letter of the movement pattern to be judged. Pages were alphabetically assembled to correspond to the order in which the movement patterns were to be executed and rated. A sample copy of the directions and a sample page of scales appear in Appendices G and H.

Personality Test

The California Test of Personality (Thorpe, Clark, and Tiegs, 1953), revealing and identifying groups of tendencies to think, feel, and act, was employed as a measure of personality. Its selection was based on its validity, objectivity, reliability, and appropriateness for the study. The test could be administered and scored efficiently and yielded an objective score needed for correlation with movement preference scores.

The total test consisted of fifteen consecutively placed items for each of the six personal security and six social security components. All one hundred and eighty questions required a "yes" or "no" reply to be indicated on a hand-scoring answer sheet. Test materials for Form AA, Secondary Series, were obtained from CTB/McGraw-Hill Publishers.

PILOT STUDY

A pilot study was undertaken to detect research design flaws and to answer questions concerning procedures for administering the movement patterns and semantic differential questionnaires. The results were used to effect practical, efficient, and controlled procedures for the ensuing testing.

Five physical education graduate students enrolled at the University of North Carolina at Greensboro were selected as subjects for the pilot study. Dressed for activity, the subjects met in the gymnasium where they were supplied with a pencil and a semantic differential questionnaire booklet. Procedures for executing and rating the movement patterns were explained. Directions specific to the pilot study were also given. Each subject was asked to indicate on the booklet if and when she grew tired executing and/or rating the movements on the questionnaire. The time necessary to execute and rate the sixteen movement patterns was recorded.

The pilot study yielded valuable information. It was learned that five was a realistic number of subjects to test at one time. The movements were learned and executed with ease and within a short time span. The total testing time was forty minutes, averaging two and one-half minutes for each pattern. Clarity of movement pattern directions

was confirmed.

SELECTION AND SCHEDULING OF SUBJECTS

Selection of subjects

The study was concerned with individuals exhibiting strong preferences for dance or sport activities. Therefore, it was imperative to select subjects on the bases of experience, proficiency, and preference for one of the two areas. A stratified sample was drawn from a population exhibiting the above characteristics.

On three successive school days, the dance and sport preferences of female students enrolled in New London Senior High School, New London, Connecticut, were surveyed. Students indicated by a show of hands whether they preferred dance or sport activities or had equally positive and negative feelings about both. Students with equal feelings were eliminated from possible selection. The remaining students who were interested in participating in a movement research study signed up according to their dance or sport preference. They placed a checkmark next to their names if they had participated in their preferred areas outside of regular physical education classes.

Out of 492 girls enrolled in grades ten through twelve at New London Senior High School, 399 were present for the survey. Of those asked, 139 equally liked or disliked both dance and sport activities. Preference for

dance was indicated by 83 students, 49 of whom volunteered for the study and 33 of whom had additional participation. Sport preference was indicated by 177, 100 of whom volunteered and 72 of whom indicated additional experience. Sixty subjects, thirty preferring dance and thirty preferring sport, were selected on the bases of amount of additional experience and strength of preference. As soon as parental permission to participate was received, the testing schedule was arranged.

Scheduling of Subjects

Each subject was scheduled to participate in the movement preference testing during her study hall or regularly scheduled physical education period. Based on her class schedule and dance or sport preference, each subject was assigned to a testing group. Twelve testing groups, one for each of the six fifty-five minute periods on two consecutive school days, were arranged. Five subjects composed each testing group, in which there was a two to three dance/sport or sport/dance ratio. Exceptions were made in two groups where scheduling difficulties resulted in four to one ratios. Prior to the testing, reminder notes and passes were issued to the subjects.

Scheduling for the California Test of Personality (Thorpe, Clark, and Tiegs, 1953) presented no problems. Each student completed this phase of the testing during her

first physical education class subsequent to the movement preference phase. Group sizes for the second testing differed according to the number of selected subjects in each physical education class.

ADMINISTRATION OF MOVEMENT PATTERNS AND INSTRUMENTS

Prior to the testing sessions, subject identification numbers were marked in the upper, right corner of each instrument. The semantic differential questionnaire booklets were assembled into testing packets according to the code numbers of the subjects assigned to each movement preference testing group. Personality test booklets containing answer sheets were sorted according to the subjects' physical education classes. Attached to each pack was a list of the names and code numbers of the subjects in that group, and the day and class period in which the group was to be tested.

Movement Patterns and Semantic Differential Questionnaire

Each group arrived at the beginning of the period to which it had been assigned. Dressed for activity, the subjects met in the gymnasium area where necessary equipment had been placed. Each subject was supplied with a pen and a number coded semantic differential questionnaire booklet. The subjects were requested not to discuss any aspects of the testing with anyone until the entire testing program was completed.

To limit the number of uncontrolled variables, specific movement pattern directions were read to each testing group. While reading the directions, the investigator demonstrated the pattern. Then all the subjects in the group executed the movements once along with the instructor/investigator and three times without her. If a subject wanted to repeat the pattern more than three times in order to get the feel of it, this was allowed. If a subject did not execute a pattern according to the directions, she was asked to repeat it correctly.

After the subjects executed a movement pattern, they evaluated the meaning of the specific effort action by judging the action against a series of twenty sets of polar adjectives. For each scale, the subject placed an "X" on one of the seven points between the two words. The proximity of the "X" to the words was indicative of the characteristics the subject associated with the effort action. When all the subjects in a group finished rating the action, the group progressed to the next movement pattern. The same procedure was followed for all sixteen patterns.

The instructor noted that the subjects were able to execute the first fifteen patterns without any apparent difficulty. However, few subjects were able to "float" off a swinging rope. Since the subjects did not actually float, the responses indicated associations with what was done rather than with what should have been done. Consequently,

those responses were eliminated from the study as invalid. In order to maintain the consistency of the study and its scoring procedures, the responses to the non-implement floating action also were omitted. The omissions reduced the number of effort themes to seven and the number of movement patterns to fourteen.

Personality Test

Within four days of the movement preference testing, the California Test of Personality (Thorpe, Clark, and Tiegs, 1953) was administered during physical education classes to all but two subjects. The exceptions took the test one week later due to illness. Each subject was given a number coded personality test booklet containing directions, test questions, and an answer sheet. Suggested instructions (Thorpe, Clark, and Tiegs, 1953: 24-25) were given and the subjects proceded to take the test and completed it within thirty to fifty minutes.

Experimental Fatalities

At the conclusion of the entire testing program, fifty-two of the original sixty subjects had completed all phases of the testing. Tardiness, unrelated injury, and absenteeism prevented eight of the subjects from participating in the movement preference phase. The subjects participating in the first phase also participated in the second phase.

SCORING

Semantic Differential Questionnaire

Each effort action concept was judged on four factors: evaluative, denoting goodness and badness associated with the action; potency, indicating power and toughness; activity, indicating quickness and excitement; and unassigned, suggesting a variety of associations not present in the three defined factors. The intensity of the association for each scale was indicated by the placement of the subject's "X" in the semantic space between the polar adjectives. Possible scale scores ranged from one to seven. Five scales represented each factor, thus, a possible total factor score ranged from five to thirty-five.

To facilitate the scoring procedures, a stencilled and keyed map for each factor was made to be superimposed on each page of the questionnaire. When properly placed, it revealed the polar adjectives and intervening seven-step semantic space representing that factor. On the map beneath each cut out portion were the one through seven numerical values of the spaces. A subject's score for each scale on one factor was quickly obtained by placing that factor map on a page and locating the numerical value of the space marked by the subject.

Scores for each scale were recorded on a separate score sheet labelled with the subject's identification

number. The sheet was divided into sixteen sections, one for each movement pattern. Each section contained spaces for four columns of five rows each to represent the five scale scores for each of the four factors. Total factor scores for each effort action were found by summing each of the columns. A copy of the score sheet appears in Appendix I.

Total factor scores were then compiled on a second score sheet illustrating scores according to effort themes and implement and non-implement movements. Implement and non-implement category scores were written in column one and column two respectively. Each row represented one effort theme.

Individual effort scores were derived by summing the implement and non-implement scores in one row. The sum was written in column three to the extreme right of that row. Total implement scores were derived by summing column one; total non-implement scores were derived by summing column two. These totals were written at the bottom of their respective columns. The total movement preference score was determined by summing the total effort scores in column three and the result was checked by summing the total implement and non-implement scores from columns one and two.

The above physical arrangement was repeated two more times yielding a total of three separate scoring sections. The first section incorporated evaluative scores, which were used to interpret movement preference. The

higher the scores, the more the subject liked to execute that movement. The second two sections were for the activity and potency scores collected for possible future use. Due to lack of factor specificity of scales in the unassigned factor, those scores were not compiled on the score sheet. However, the scales were included on the semantic differential questionnaire to add to the multifariousness of the polar adjectives employed. A copy of the score sheet and listing of the subjects' preference scores appear in Appendices J-P.

Personality Test

The California Test of Personality (Thorpe, Clark, and Tiegs, 1953) was hand-scored by using a hand-scoring key obtained from CTB/McGraw-Hill. The answer sheet was designed so that each row of fifteen responses represented a different adjustment component. The score for each of the twelve components was obtained by counting the total number of examinee response marks showing through the holes of the stencil superimposed on the answer sheet. Possible scores for each component ranged from zero to fifteen. In each section, the total number of visible responses was written to the right of the row scored.

After scoring the answer sheets, the component scores were finally recorded in spaces provided at the bottom of the sheet. The six personal security scores were

totalled to furnish a total personal adjustment score. The total social adjustment score was determined by summing the six social security scores. A total adjustment score was arrived at by summing the total personal and total social adjustment scores. The higher the total adjustment score, the more well-adjusted the subject was considered to be. Copies of the subjects' personality scores appear in Appendices Q and R.

CHAPTER V

ANALYSIS AND INTERPRETATION OF DATA

The purpose of this study was to investigate the interaction of personality and movement preference. Primary explorations examined relationships between personality and preferences for non-implement and implement movements of eight basic effort themes. Subsequent explorations delved into personality and movement preference differences between dance and sport groups.

The subjects for this study were twenty-six female dance-oriented subjects and twenty-six female sport-oriented subjects enrolled in the tenth, eleventh, and twelfth grades at New London Senior High School in New London, Connecticut. The data were collected within a two-week period in February, 1972.

ANALYSIS OF DATA

The fifty-two subjects executed one non-implement movement pattern and one implement movement pattern for the slash, wring, dab, punch, glide, flick, press, and float effort themes, and then rated them on a semantic differential questionnaire. The evaluative factor was utilized to measure and interpret preference. Therefore, the evaluative scores indicating preferences for total movement, non-implement move-

ments, implement movements, and each of seven effort themes were tabulated. Scores for the eighth effort theme, float, were elminated as invalid due to incorrect execution of the movement pattern.

Within four days of the movement preference testing, the subjects completed the California Test of Personality (Thorpe, Clark, and Tiegs, 1953). The personal and social adjustment scores were summed to yield a total adjustment score as a measure of personality. Raw grouped data are presented in Tables XVIII and XIX in the Appendix.

Null hypotheses concerning personality and movement preferences of dance and sport subjects were formulated. The five per cent level of confidence was determined to be the statistical significance standard upon which to base the tenability of the hypotheses.

The following null hypotheses concerning relationships of personality to movement preferences were tested:

1. There is no significant relationship between personality and total movement preference with regard to the following groups:
   a. Dance
   b. Sport
   c. Dance and sport groups combined.
2. There is no significant relationship between personality and non-implement movement preference with regard to the following groups:
   a. Dance

b. Sport

c. Dance and sport groups combined.

3. There is no significant relationship between personality and implement movement preference with regard to the following groups:

a. Dance

b. Sport

c. Dance and sport groups combined.

As depicted in Table I, the computation of the correlation coefficients for relationships between personality and movement preferences revealed no significant "r's" at the five per cent level of confidence. Therefore, the above null hypotheses were found tenable.

TABLE I

CORRELATION COEFFICIENTS BETWEEN PERSONALITY AND MOVEMENT PREFERENCES OF THE DANCE, SPORT, AND COMBINED GROUPS

	N	Total Movement	Non-implement Movement	Implement Movement
Dance	26	.0717	-.0225	.1482
Sport	26	.0663	-.0855	.2177
Combined	52	.0573	-.0942	.2075

The following null hypothesis concerning differences

between the dance and sport groups with regard to their personality-movement preference relationships were tested:

4. There is no significant difference between the dance and sport groups with regard to the following relationships:
   a. Personality to total movement preference
   b. Personality to non-implement movement preference
   c. Personality to implement movement preference.

The "z" transformation was utilized to determine significance of differences between the dance and sport groups' relationships. Computations, as depicted in Table II, discovered no significant "z" coefficients at the five per cent level of confidence. Therefore, the above null hypotheses were found tenable.

TABLE II

SIGNIFICANCE OF DIFFERENCE OF CORRELATION COEFFICIENTS OF PERSONALITY AND MOVEMENT PREFERENCES BETWEEN THE DANCE AND SPORT GROUPS

	Dance		Sport		
	N	r	N	r	z
Personality-Total Movement	26	.0717	26	.0663	.0184
Personality-Non-implement Movement	26	-.0225	26	-.0855	-.2143
Personality-Implement Movement	26	.1482	26	.2177	.2422

The following null hypothesis concerning personality and total movement preference differences between the dance and sport groups was tested:

5. There is no significant difference between the dance and sport groups with regard to the following variables:
   a. Personality
   b. Total movement preference.

Fisher's "t" test for the difference between the means was employed. As indicated in Table III, no significant differences were found. Therefore, the above hypothesis was found tenable.

TABLE III

"t" VALUES FOR DIFFERENCES BETWEEN THE DANCE AND SPORT GROUPS WITH REGARD TO PERSONALITY AND TOTAL MOVEMENT PREFERENCE

	N	df	Dance Means	Sport Means	t
Personality	52	50	124.9615	133.6923	1.7622
Total Movement	52	50	294.8461	293.0769	0.1756

The following null hypotheses concerning non-implement and implement movement preference differences within and between the dance and sport groups were tested:

6. There is no significant difference between the

dance and sport groups with regard to the following movement preferences:

a. Non-implement

b. Implement.

7. There is no significant difference between preferences for non-implement and implement movements with regard to the following groups:

a. Dance

b. Sport

c. Dance and sport groups combined.

Computation of the 2 x 2 factorial analysis of variance, reported in Table IV, revealed no statistically significant differences between the dance and sport groups. Therefore, the null hypothesis that there is no significant difference between the dance and sport groups regarding non-implement and implement movement preference was found tenable.

The analysis did reveal statistically significant differences between preferences for non-implement and implement movements with regard to the dance, sport, and combined groups. Therefore, the Tukey test for determining the significance of difference between sample means was applied. As reported in Table V, significant differences were found to exist between preference for non-implement movement and preference for implement movement of the dance group and combined groups, but not between preferences of the sport

group. Thus, the null hypothesis that there is no significant difference between preferences for non-implement and implement movement was found tenable for the sport group and it was found untenable at the five per cent level of confidence for the dance group, and the dance and sport groups combined.

TABLE IV

ANALYSIS OF VARIANCE OF DIFFERENCES CONCERNING NON-IMPLEMENT AND IMPLEMENT MOVEMENT PREFERENCES OF THE DANCE AND SPORT GROUPS

Source of variation	Sum of squares	df	Mean square	F
Between groups	20.3461	1	20.3461	0.0491
Between movements	1777.8846	1	1777.8846	4.2946#
Interaction	1098.5000	1	1098.5000	2.6535
Within	41397.2307	100	413.9723	20.3463

significant at the five per cent level of confidence.

The following null hypotheses were tested to determine differences between and within groups concerning preferences for each of the seven basic effort themes:

8. There is no significant difference between the dance and sport groups with regard to preferences for any of the seven effort themes.
9. There are no significant differences between pref-

erences for each of the seven effort themes with regard to the following groups.

a. Dance

b. Sport

c. Dance and sport groups combined.

TABLE V

DIFFERENCES BETWEEN NON-IMPLEMENT AND IMPLEMENT MOVEMENT PREFERENCE MEANS OF THE DANCE AND SPORT GROUPS

	N	Differences between means
Dance	26	14.769#
Sport	26	1.770
Combined	52	8.2692#

significant at the five per cent level of confidence.

Computation of the 2 x 2 factorial analysis of variance, presented in Table VI, revealed significant differences between preferences for the seven effort themes, but did not reveal significant differences between the dance and sport groups concerning those preferences. Therefore, the null hypothesis that there are no significant differences between the dance and sport groups with regard to preferences for any of the seven effort themes was found tenable. The null hypothesis that there are no significant differences between preferences for each of the seven effort

themes with regard to the dance, sport, and combined groups was found untenable at the five per cent level of confidence. As reported in Tables VII, VIII, and IX, application of the Tukey test revealed the specific effort themes between which statistically significant differences existed at the five per cent level of confidence.

TABLE VI

ANALYSIS OF VARIANCE OF DIFFERENCES CONCERNING THE DANCE AND SPORT GROUPS' PREFERENCES FOR THE SEVEN BASIC EFFORT THEMES

Source of variation	Sum of squares	df	Mean square	F
Between groups	2.9917	1	2.9917	0.0240
Between efforts	11730.8021	6	1955.2336	15.6966#
Interaction	594.2197	6	99.0366	0.7951
Within	43594.9615	350	124.5570	11.1605

#Significant at the five per cent level of confidence.

TABLE VII

DIFFERENCES BETWEEN MEANS OF THE DANCE GROUP'S PREFERENCES FOR THE SEVEN BASIC EFFORT THEMES

Preferential order	Glide	Flick	Punch	Dab	Wring	Press
Glide	- -	- -	- -	- -	- -	- -
Flick	6.807	- -	- -	- -	- -	- -
Punch	7.769	0.962	- -	- -	- -	- -
Dab	7.923	1.116	0.154	- -	- -	- -
Wring	13.731#	6.924	5.962	5.808	- -	- -
Press	15.538#	8.731	7.769	7.615	1.807	- -
Slash	15.577#	8.770	7.808	7.654	1.846	0.039

Significant at the five per cent level of confidence.

TABLE VIII

DIFFERENCES BETWEEN MEANS OF THE SPORT GROUP'S PREFERENCES FOR THE SEVEN BASIC EFFORT THEMES

Preferential order	Glide	Flick	Punch	Dab	Slash	Wring
Glide	- -	- -	- -	- -	- -	- -
Flick	6.346	- -	- -	- -	- -	- -
Punch	13.615#	7.269	- -	- -	- -	- -
Dab	14.423#	8.257	.808	- -	- -	- -
Slash	16.538#	10.192#	2.923	2.115	- -	- -
Wring	17.000#	10.654#	3.385	2.577	0.462	- -
Press	19.154#	12.808#	5.539	4.731	2.616	2.154

Significant at the five per cent level of confidence.

TABLE IX

DIFFERENCES BETWEEN MEANS OF THE COMBINED DANCE AND SPORT GROUPS' PREFERENCES FOR THE SEVEN BASIC EFFORT THEMES

Preferential order	Glide	Flick	Punch	Dab	Wring	Slash
Glide	- -	- -	- -	- -	- -	- -
Flick	6.5769#	- -	- -	- -	- -	- -
Punch	10.6923#	4.1154	- -	- -	- -	- -
Dab	11.1730#	4.5961	0.4807	- -	- -	- -
Wring	15.3653#	8.7884#	4.6730	4.1923	- -	- -
Slash	16.0576#	9.4807#	5.3653	4.8846	0.6923	- -
Press	17.3461#	10.7692#	6.6538#	6.1731	1.9808	1.2883

#significant at the five per cent level of confidence.

INTERPRETATION OF DATA

Computation of correlation coefficients revealed no significant "r's" between personality and movement preferences of the dance, sport, and combined groups. These results support the conclusion that the personalities of female, high school dance and sport subjects were not related to the subjects' preferences for movement patterns representing seven basic effort themes and distinguished on the basis of equipment usage. These results imply that personality, reported as a total adjustment score, was not a factor influencing movement preference and, conversely,

that movement preference was not a factor influencing personality.

These results do not eradicate the possibility that individual factors or components of personality may be related to movement preference. In studies investigating personality, significant relationships occurred more often with individual personality components and traits than with the total personality profile (Kroll, 1967). (Thune, 1949), (Peterson, Weber, and Trousdale, 1967), (Singer, 1969), (Lakie, 1964), (Flanagan, 1951), (Slusher, 1964), (Sperling, 1942), (Booth, 1955). Consequently, repetition of this study utilizing a more definitive instrument and factor analysis might offer additional information.

The subjects were divided into two groups on the basis of their interest, proficiency, and participation in dance and sport. Therefore, it seemed logical to investigate differences in the strength of each group's relationship between personality and movement preference. Utilization of the "z" transformation revealed no significant differences between the stated relationships of the dance and sport groups. Therefore, it was concluded that association with dance, in contrast to sport, was not a factor determining a relationship between personality and movement preference. These results imply that dance subjects' movement preferences were no more or less influenced by personality than the movement preferences of the sport subjects; nor was

the personality of one group of subjects influenced by movement likes and dislikes any more or less than the personality of the other group.

Fisher's "t" revealed no significant differences between the dance and sport groups with regard to personality and total movement preference. Thus, it may be concluded, that female, high school dance subjects resembled female, high school sport subjects in total personality, Also, despite distinct differences in activity inclinations, the dance subjects did not differ from the sport subjects in the degrees of preference they expressed for total movement, including seven different effort themes executed with and without equipment. The results imply that the dance group and the sport group came from a homogeneous population with regard to personality and to positive and negative feelings for a combination of varied movement patterns.

Analysis of variance revealed no significant differences between the dance and sport subjects with regard to non-implement and implement movement preferences. These results support the conclusion that female, high school dance subjects and female, high school sport subjects represented a like sample in their preferences to execute movement patterns not requiring equipment and in their preferences to execute movement patterns requiring equipment. Thus, it appeared that both groups of subjects came from a homogeneous population with regard to those preferences and that

one group could not be distinguished from the other on the basis of preferences for non-implement movement patterns or on the basis of preferences for implement movement patterns.

Analysis of variance revealed no significant differences between the sport group's non-implement and implement movement preferences. Therefore, it may be concluded that individuals focusing their movement interests on sport possessed equal desire to execute movement patterns with or without extraneous equipment.

Analysis of variance and application of the Tukey test revealed a significant difference between preferences for non-implement and implement movements with regard to the dance and combined groups. These results support the conclusion that the dance subjects and total sample of subjects preferred to execute movement patterns not requiring the use of equipment.

Interpretation of these results suggest that the inclusion or exclusion of an object in the execution of a movement pattern was a significant factor determining preference for that pattern. These conclusions lend support to Houston's conclusions that cited reasons for stimulus objects and movement preferences seem "... to have some relation to the kind of stimulus evoking movement and the response and effort pattern it elicited" (Houston, 1967: 143). These results also imply that the dance subjects were more likely than the sport subjects to base their movement preferences

on whether or not equipment was required in the execution of the movement patterns.

Analysis of variance revealed no significant differences between the dance and sport groups with regard to preferences for any of the seven basic effort themes. These results support the conclusion that female, high school dance subjects like and dislike the same effort themes as female, high school sport subjects. This conclusion implies that dance affiliation, in contrast to sport affiliation, has no influence in determining the efforts, or movement qualities, high school girls liked and disliked.

After looking at the means of the seven effort theme preference scores for the dance, sport, and combined groups, it was possible to rank the effort themes preferentially for each group of subjects. As illustrated in Tables VII, VIII, and IX, the preferential orders were almost identical for each group of subjects. Those findings were to be expected in light of the fact that the dance and sport groups liked and disliked the same effort themes.

However, analysis of variance followed by application of the Tukey test did reveal significant differences between preferences for some of the effort themes with regard to the dance, sport, and combined groups. These results support the conclusion that the dance, sport, and combined groups each liked and disliked executing some effort theme move-

ment patterns more than other effort theme movement patterns. These results imply that although the dance and sport groups liked and disliked the same effort theme movement patterns, each group was able to distinquish between which effort theme movement patterns it preferred to execute.

In summary, it appears that the total personality profile was not significantly related to preferences for movements varying in effort and equipment usage. Female, high school dance subjects did not differ from female, high school sport subjects with regard to personality or preferences for total movement, non-implement movement, implement movement, or seven different effort theme movement patterns. However, although the sport group expressed equal preferences for non-implement and implement movement patterns, the dance and combined groups significantly preferred non-implement to implement movement patterns. In conclusion, female, high school dance subjects generally resembled female, high school sport subjects in respect to personality and movement preferences, and each group of subjects was able to distinguish between which of the varied movement patterns it preferred to execute.

CRITIQUE

The data for this study are limited in their application and should be interpreted in terms of the following limitations governing the research design:

1. The subjects represented a selected sample of female, high school students participating in dance and sport activities beyond required physical education classes.
2. Stated interest, demonstrated proficiency, and active participation were the major criteria of selection.
3. No additional control was attempted for the degree of interest, proficiency, and participation in the subjects' preferred activities or for the dance subjects' previous exposure to sport or the sport subjects' previous exposure to dance.
4. Personality was reported as a total personal-social adjustment score incorporating six personal security components and six social security components.

In light of the stated results and limitations, the following suggestions for further investigation are offered:

1. A repetition of this study utilizing controlled groups of subjects representing diverse ages,

sexes, proficiencies, participation in their preferred activity, and exposure to their non-preferred activity.

2. A repetition of this study utilizing a more definitive personality tool, and employing factor analysis of the individual personality traits to investigate relationships and differences involving the individual personality components.
3. An indepth study focusing entirely on movement preference differences and similarities of dance and sport subjects incorporating the above controlled conditions.
4. A study investigating the long-term effects on personality of repeated execution of specific movement patterns.
5. A study investigating subjects' conscious reasons for preferring specific effort theme movement patterns and specific equipment implementation.

CHAPTER VI

SUMMARY AND CONCLUSIONS

The purpose of this study was to investigate the interaction of personality and movement preference. Primary explorations examined relationships between personality and preferences for non-implement and implement movement patterns of eight basic effort themes. Subsequent explorations delved into personality and movement preference differences between the dance and sport groups.

The subjects for this study were twenty-six female dance-oriented subjects and twenty-six female sport-oriented subjects enrolled in the tenth, eleventh, and twelfth grades at New London Senior High School in New London, Connecticut. The data were collected within a two-week period in February, 1972.

During the movement preference testing, each subject performed one non-implement and one implement movement pattern for the slash, wring, dab, punch, glide, flick, press, and float effort themes. Following the execution of each movement pattern, the subjects judged the pattern against a series of descriptive scales on a semantic differential questionnaire. Movement preferences were determined by summing the subjects numerically weighted responses on the five evaluative factor scales of the questionnaire.

Within four days of the movement preference testing, each subject completed Thorpe, Clark, and Tiegs' (1953) 180-item California Test of Personality. Total personality adjustment scores, revealing tendencies to feel, think, and act, were derived by summing the subjects' scores on six personal security and six social security components.

Formulated null hypotheses concerned relationships of personality to preferences for a variety of movement patterns and differences between the dance and sport subjects regarding their own personalities and movement preferences. Pearson Product-Moment, Fisher's "t", "z" transformation, and analysis of variance were the statistical processes employed to treat the data.

The following results were obtained:

1. There was no significant relationship between personality and total movement preference with regard to the following groups:
   a. Dance
   b. Sport
   c. Dance and sport groups combined.
2. There was no significant relationship between personality and non-implement movement preference with regard to the following groups:
   a. Dance
   b. Sport
   c. Dance and sport groups combined.

3. There was no significant relationship between personality and implement movement preference with regard to the following groups:
   a. Dance
   b. Sport
   c. Dance and sport groups combined.
4. There was no significant difference between the dance and sport groups with regard to the following relationships:
   a. Personality to total movement preference
   b. Personality to non-implement movement preference
   c. Personality to implement movement preference.
5. There was no significant difference between the dance and sport groups with regard to the following variables:
   a. Personality
   b. Total movement preference.
6. There was no significant difference between the dance and sport groups with regard to the following movement preferences:
   a. Non-implement
   b. Implement.
7. There was a significant difference between preferences for non-implement and implement movements with regard to the following groups:

a. Dance

b. Dance and sport groups combined.

8. There was no significant difference between preferences for non-implement and implement movement with regard to the sport group.

9. There was no significant difference between the dance and sport groups with regard to preferences for each of the seven effort themes with regard to the following groups:

a. Dance

b. Sport

c. Dance and sport groups combined.

On the basis of the above statistical results, the following conclusions were inferred:

1. The personalities of female, high school dance and sport subjects was not related to the subjects' preferences for total movement, non-implement movement, and implement movement.

2. Female, high school subjects' associations with dance, in contrast to sport, was not influential in determining the strength of each group's relationships between personality and movement preferences.

3. Female, high school dance subjects resembled female, high school sport subjects in personality

and in preferences for total movement, non-implement movement, and implement movement.

4. Female, high school sport subjects expressed equal desire to execute movement patterns with or without equipment.
5. The dance group and combined group preferred to execute movement patterns not requiring the use of equipment.
6. Female, high school dance subjects liked and disliked executing the same effort theme movement patterns as the female, high school sport subjects.
7. The dance, sport and combined groups each preferred to execute some effort theme movement patterns more than other effort theme movement patterns.

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APPENDICES

APPENDIX A

Original Movement Patterns

ORIGINAL MOVEMENT PATTERNS

N: non-implement movement pattern
I: implement movement pattern
s.p.: starting position
m.p.: movement pattern

DAB: light, quick, direct

N. s.p.: Stand with feet together, hands on hips.
m.p.: (Small, quick, bouncy jumps in zig zag pattern). Start behind a mark, push off both feet and land 6 inches diagonally forward to right on both feet. Immediately push off both feet and repeat to left. Continue a total of 8 jumps.

I. s.p.: Stand with feet together behind medium size playground ball, arms at sides.
m.p.: (Dribble). Using very short, quick taps with toes, propel ball forward about 1 foot on each of 8 taps. Alternate feet.

FLICK: light, quick, flexible

N. s.p.: Stand with feet together, arms at sides.
m.p.: (Light Skips). Start on right foot. 2 skips to right, 2 to left, 4 in circle to right. Hands, arms, head fluttering in direction of body movement.

I. s.p.: Stand in backhand position (diagonal forward-backward stride, weight forward) behind and to side of shuttlecock hanging at hip level from a string. Badminton racquet in dominant hand, racquet face just touching shuttlecock.
m.p.: (Backhand). With quick, snapping action confined to wrist, flex and then hyperextend wrist so racquet face contacts shuttlecock and propels it away from body.

FLOAT: light, sustained, flexible

N. s.p.: Stand with feet together, arms at sides.
m.p.: Start on right foot and take 3 light, airy steps to right (step-close-step) with arms out to sides as though suspended, moving with rhythm of body. Step diagonally forward to left, swinging right leg forward and up; swing both arms overhead. Releve on left foot, pivot to left, plie lowering heel to ground and arms in front of body. Finish in arabesque. Entire movement pattern should be done lightly.

I. s.p.: Stand on stool, hold onto climbing rope (hanging from ceiling) which has been pulled back from ceiling at a 45° angle.
m.p.: (Swing and float off rope). Lift feet off stool and swing forward. Drop off rope at peak of swing and land on 2 feet on mat.

GLIDE: light sustained, direct

N. s.p.: Stand with feet together, hands at sides.
m.p.: Step to right on right foot, knee bent, keep body at same level. Cross left foot in front of right taking weight on left. Step to right onto right foot, etc., a total of eight steps. Steps should be light, smooth, even, and in straight line to right.

I. s.p.: Stand with feet together and hold a medium-sized playground ball with both hands in front of body.
m.p.: (Walk and roll ball). Slowly and smoothly move dominant arm and ball backward and then forward while taking three steps forward starting with non-dominant foot. On the third step, release ball so that it rolls forward smoothly along the floor.

PRESS: strong, sustained, direct

N. s.p.: Sit on floor, right leg extended to front, left leg bent with left foot close to left hip. Right hand on floor near right hip, left arm bent and held between chest and left thigh.

m.p.: (Weidman push up). With emphasis on hip movement and weight supported by right hand and both feet, slowly lift body off floor as high as possible, left arm extending up toward ceiling. (Weidman push up). Turn body to right, cross left leg over right, put left hand on floor so body is supported by hands and feet. Slowly and evenly lower body to floor.

I. s.p.: Hang from chinning bar.
m.p.: (Leg lift). Keeping legs straight, lift both legs forward and up to a 90° angle at hip, hold position briefly, slowly lower legs to starting position.

PUNCH: strong, quick, direct

N. s.p.: Stand with feet hip width apart, hands at sides.
m.p.: (Standing broad jump). Bend knees, swing both arms down and back, lean forward and swing arms forward and straighten knees and ankles so as to propel body off both feet and into the air as far as possible before landing on both feet.

I. s.p.: Stand in forward-backward stride position, dominant foot back, weight mostly on back foot. Medium size playground ball on palm of non-dominant hand held in front of dominant side of body. Dominant hand in fist, just behind lower back portion of ball.
m.p.: (Underarm serve). Swing dominant arm back, then transfer weight onto front foot as arm forcefully and quickly swings forward punching ball forward and up into air.

SLASH: strong, quick, flexible

N. s.p.: Stand with feet hip width apart, arms at sides.
m.p.: Quickly and forcefully raise dominant arm in front of body at face level and make a large "Z" (sign of Zorro) in the air.

I. s.p.: Stand with feet hip width apart, 1 end of 5 foot long, ½ inch diameter rope in dominant hand, arm extended in front of body at shoulder level.

m.p.: (Rope snapping). Starting at right and in front of body, gradually move arm to left while making quick, forceful up and down movements with arm causing the loose end of rope to snap on floor 4 times.

WRING: strong, sustained, flexible

N. s.p.: Stand in wide, side-stride position, weight on right foot, hands clasped together, arms raised diagonally to right above head level.

m.p.: (Slow spiral). Initiate movement in hands, moving them to left as far as possible followed by shoulders, then trunk, hip, etc., while gradually bending knees lowering body to floor. Finally cross right foot over left finishing downward spiral with a pivot which initiates an upward spiral. Finish with feet close together and arms extended overhead.

I. s.p.: Stand in diagonal forward-backward stride position, small playground ball in dominant hand, body weight mostly on forward foot.

m.p.: (Slow motion windup for overarm pitch). Arms swing naturally with body movement. Transfer weight onto back foot and then onto front foot again with rhythm of movement in upper body. Turn body to dominant side, lean diagonally back over back leg, non-dominant leg swings forward and up, bends, and comes close to trunk as arms move on dominant side of body back past head.

APPENDIX B

Finalized Movement Patterns

FINALIZED MOVEMENT PATTERNS

N: non-implement movement pattern
I: implement movement pattern
s.p.: starting position
m.p.: movement pattern

DAB: light, quick, direct

N. s.p.: Stand behind line on balls of feet, feet close together.
m.p.: (Small, quick, bouncy jumps in straight line). Quickly push off both feet and land about 6 inches forward on balls of both feet. Immediately repeat jumping forward 6 more inches. Continue a total of 4 jumps. Consider the foot, ankle, and lower leg action.

I. s.p.: Stand with feet together behind medium size playground ball, arms at sides.
m.p.: (Dribble). Using very short, quick taps with toes, propel ball forward about 1 foot on each of 8 taps. Alternate feet. Consider tapping action of toes.

FLICK: light, quick, flexible

N. s.p.: Stand with feet together, arms at sides.
m.p.: (Light skips). Start on right foot. 1 skip to right, 1 to left, 2 in circle to right. Hands, head, and arms fluttering in direction of body movement. Consider foot, knee, hand, and head action.

I. s.p.: Stand in backhand position (diagonal forward-backward stride, weight forward) behind and to side of shuttlecock hanging at hip level from a string. Badminton racquet in dominant hand, racquet face just touching shuttlecock.
m.p.: (Backhand). With quick, snapping action confined to wrist, flex and then hyperextend wrist so racquet face contacts shuttlecock and propels it away from body. Consider the wrist action.

FLOAT: light, sustained, flexible

N. s.p.: Stand with feet comfortably apart, knees bent, arms extended in front of body at chest level.
m.p.: (Rising and falling). Slowly straighten knees and releve, then reverse movement and return to starting position. As body rises, arms begin to rise with movement beginning in elbows and continuing in lower arms, wrists, and fingers. As fingers begin to rise, body starts lowering, producing an undulating action. Consider the arm action.

I. s.p.: Stand behind line 20 feet behind a climbing rope hanging from ceiling.
m.p.: (Swing off rope and float in air). Run fast, grab rope with both hands and swing hips up and forward. Let go of rope at peak of swing and, emphasizing hip motion, extend flight as long as possible before landing on mats. Consider the free flight action.

GLIDE: light, sustained, direct

N. s.p.: Stand on balls of feet, feet together.
m.p.: (Gliding walk). Take 8 smooth and even steps forward leading with chest and head so body appears to glide across the floor. Consider the whole body action.

I. s.p.: Stand in crouched forward-backward stride position, medium size playground ball in dominant hand, dominant arm reaching backwards.
m.p.: (Roll ball). Slowly and smoothly move dominant arm forward causing the ball to roll forward smoothly along the floor. Consider the forward arm action.

PRESS: strong, sustained, direct

N. s.p.: Body on floor in modified push up position.
m.p.: (Push up). Slowly and evenly extend arms pushing body up into modified push up position with trunk off floor. Consider finger, hand, arm, and shoulder action.

I. s.p.: With elbows extended, hang by both hands from one rung of horizontal climbing ladder.
m.p.: (Leg lift). Keeping knees straight, slowly and evenly lift legs forward from hips, until legs are parallel to floor at a 90° angle at hips. No swinging motion. Consider leg,

finger, and hand action.

PUNCH: strong, quick, direct

N. s.p.: Stand with feet hip width apart, knees bent, elbows bent with hands by shoulders.
m.p.: (Vertical jump). Jump straight up off the ground as high as possible. Consider the leg action.

I. s.p.: Stand in sidestride position, dominant hand in fist in front of face, back of hand toward ceiling. Hold medium size playground ball in other hand in front of body at hip level.
m.p.: (Punch ball). Toss the ball up in front of face and punch the ball directly forward with fist. Consider the punching action of arm.

SLASH: strong, quick, flexible

N. s.p.: Stand in side stride position. Dominant arm extended diagonally up to left in front of body.
m.p.: Using whole arm, quickly and forcefully make a large "Z" in front of body on the air. Consider the entire arm action.

I. s.p.: Stand with feet hip width apart. Hold on 1 end of a 5 foot long, ½ inch diameter rope in dominant hand, dominant arm extended in front of body at shoulder level.
m.p.: (Rope snapping). Forcefully move whole arm diagonally down to the left causing loose end of rope to snap on floor. Lift arm up and repeat to right. Consider the arm action.

WRING: strong, sustained, flexible

N. s.p.: Stand with feet comfortably apart, weight mostly on right foot. Hands clasped together, arms extended diagonally up to right.
m.p.: (Slow spiral). Knees bent gradually through entire movement pattern. As knees bend, arms move diagonally down to left in front of body as far as possible, then shoulders, trunk, and hips follow in sequence until body finishes spiral in a low crouched position. Consider the entire body action.

I. s.p.: Stand with feet hip width apart. Hold one end of a 1 yard long stick with both hands. Arms are stretched out in front of body so the other end of stick touches the ground.

m.p.: (Slow motion golf backswing with even force application). Keeping elbows straight, slowly move them to the right lifting free end of stock off ground. Continue to lift the stick up to right, finally bending arms and twisting body to right in order to wrap stick behind head. Consider the entire body action.

APPENDIX C

Percentages of Agreement by Five Judges on Original and Finalized Movement Patterns

TABLE X

PERCENTAGES OF AGREEMENT BY FIVE JUDGES ON ORIGINAL AND FINALIZED MOVEMENT PATTERNS

Movement pattern		Percent agreement	
Effort	Equipment	Original	Finalized
Dab	Non-implement	60	100
Dab	Implement	60	80
Flick	Non-implement	60	80
Flick	Implement	100	100
Float	Non-implement	40	80
Float	Implement	0	80
Glide	Non-implement	60	80
Glide	Implement	60	80
Press	Non-implement	40	100
Press	Implement	60	100
Punch	Non-implement	40	100
Punch	Implement	40	80
Slash	Non-implement	60	80
Slash	Implement	60	80
Wring	Non-implement	80	100
Wring	Implement	60	80

APPENDIX D

Directions for Sixteen Individual Movement Patterns (Alphabetically Labelled in Order of Execution)

MOVEMENT PATTERN DIRECTIONS

The parenthesized comments were not said to the subjects.

A. (Slash: implement)

Stand with your feet hip width apart. Hold one end of the rope with your preferred hand and extend that arm in front of you at shoulder level.

Move your whole arm diagonally down and across in front of your body, loudly snapping the rope on the floor: left, right, left, right, one snap on each count (moderately fast 1-2-3-4). Consider the entire arm action. (Repeat 3 times).

B. (Wring: implement)

Stand with your feet hip width apart. Hold one end of the stick with two hands and stretch your arms out in front of you so that the other end of the stick touches the ground.

The pattern will take 8 (slow 1-2-3-4-5-6-7-8) counts. Keep your arms straight and move them to the right lifting the stick off the ground. Continue to lift the stick up to the right, finally bending your arms and moving your body in order to wrap the stick behind your head as much as possible by count 8. Consider the entire body action. (Repeat 3 times).

C. (Dab: non-implement)

Stand behind the line on the balls of your feet with your feet close together.

To my count of 4 (fast 1-2-3-4), jump forward landing on the balls of both feet once in each of the four squares. Consider the foot, ankle, and lower leg action. (Repeat 3 times).

D. (Punch: non-implement)

Stand with your feet hip width apart, knees bent, elbows bent with your hands by your shoulders.

On my signal, jump up as high as possible. Consider the leg action. (Repeat 3 times).

E. (Slash: non-implement)

Stand with your feet hip width apart and extend your preferred arm diagonally up to the left in front of your body.

Using your whole arm, make a "Z" in front of your body to a count of 3 (moderately fast 1-2-3). Consider the whole arm action. (Repeat 3 times).

F. (Float: non-implement)

Stand with your feet about 3" apart, knees bent, arms extended in front of you at chest level.

To my count of 6 (moderately slow 1-2-3-4-5-6), straighten your legs and rise up on your toes, then go back down, up, down. At the same time, wave your arms up and down by initiating the movement in your elbows, then wrists, then fingers. Consider the arm action. (Repeat 3 times).

G. (Punch: implement)

Stand with your feet hip width apart. Make a fist with your preferred hand and hold it in front of your face with the back of your hand toward the ceiling. Hold the playground ball in your other hand in front of you at hip level.

Toss the ball up in front of your face and hit it forward with your fist. Consider the hitting action. (Repeat 3 times).

H. (Glide: implement)

Stand in a forward-backward stride position, knees bent, body near the floor. Hold the playground ball in your preferred hand with that arm extended backward.

To my count of 4 (moderately slow 1-2-3-4), move your arm forward near the floor so that the ball rolls off your fingers on count 4 and travels along the floor without bouncing. Consider the forward arm action. (Repeat 3 times).

I. (Flick: non-implement)

Stand with your feet together. As you move to my count of 4 (moderately fast 1-2-3-4), let your hands, head, and torso lean in the direction you move.

Start on your right foot. Skip once to the right, once to the left, and two skips in a circle to the right.

Consider the foot, knee, hand, and head action. (Repeat 3 times).

J. (Dab: implement)

Stand with your feet together behind a playground ball.

Use your toes to tap the ball alternately with each foot a total of 8 times, one tap to each count (moderately fast 1-2-3-4-5-6-7-8). Keep the ball near your toes. Consider the tapping action of your toes. (Repeat 3 times).

K. (Wring: non-implement)

Stand with your feet comfortably apart, weight mostly on your right foot. Clasp your hands together and extend your arms diagonally up to the right.

Start bending your knees and continue to bend them throughout the entire movement pattern. As your knees bend, move your arms diagonally down to the left in front of your body, then let your shoulders, trunk, and hips follow in dequence until you finish in a crouched position on count 8 (slow 1-2-3-4-5-6-7-8). Consider the entire body action. (Repeat 3 times).

L. (Press: non-implement)

Get into a modified push up position on your hands and knees, back straight, elbows bent, chin and chest near the floor.

Keeping your back straight, to my count of 4 (slow 1-2-3-4), raise your body from the knees up away from the floor until your elbows are completely straight on count 4. Consider the finger, hand, arm, and shoulder action (Repeat 3 times).

M. (Glide: non-implement)

Stand on the balls of your feet, feet together.

Leading with your head and chest, take 8 steps forward to my count of 8 (moderate 1-2-3-4-5-6-7-8). Consider the entire body action. (Repeat 3 times).

N. (Press: implement)

With your hands shoulder width apart, hang from 1 rung of the horizontal ladder.

With your legs straight, to my count of 4 (slow 1-2-3-4), raise your legs in front of you until they are parallel to the floor on count 4. Consider the leg, finger, and hand action. (Repeat 3 times).

O. (Flick: non-implement)

Stand with your feet in a forward-backward stride position. Hold the racquet in your preferred hand, your elbow on your hip, and racquet face behind the shuttlecock.

Using hand and wrist action, hit the shuttlecock away from you. Consider the forward hand and wrist action. (Repeat 3 times).

P. (Float: implement)

Stand behind the line.

Run, grab the rope with both hands, lift your hips high. At the end of the forward swing, let go of the rope and stay in the air extending your flight as much as possible before landing on the mats. Consider the action after you let go of the rope and before you land. (Repeat 3 times).

APPENDIX E

Percentages of Agreement by Fifteen Judges on Suggested Semantic Differential Polar Adjectives (Evaluative, Activity, Potency, and Unassigned Factors)

TABLE XI

PERCENTAGES OF AGREEMENT BY FIFTEEN JUDGES ON SUGGESTED SEMANTIC DIFFERENTIAL POLAR ADJECTIVES (EVALUATIVE, ACTIVITY, POTENCY, AND UNASSIGNED FACTORS)

Polar adjectives	Percent agreement
Evaluative factor	
beautiful-ugly#	53.33
brave-cowardly	26.66
calm-agitated	53.33
good-bad	6.66
graceful-awkward#	93.33
happy-sad	40.00
harmonious-dissonant#	73.33
high-low	53.33
kind-cruel	0.00
meaningful-meaningless	33.33
nice-awful	0.00
optimistic-pessimistic	6.66
pleasant-unpleasant	40.00
pleasurable-painful#	73.33
relaxed-tense#	100.00
successful-unsuccessful	26.66
valuable-worthless	6.66

utilized in semantic differential questionnaire.

TABLE XI (continued)

Polar adjectives	Percent agreement
Activity factor	
active-passive#	73.33
complex-simple#	93.33
difficult-easy	80.00
excitable-calm	66.66
fast-slow#	100.00
hot-cold	0.00
impulsive-deliberate#	86.66
intentional-unintentional	53.33
motivated-aimless#	86.66
sharp-dull	40.00
young-old	20.00

#utilized in semantic differential questionnaire

TABLE XI (continued)

Polar adjectives	Percent agreement
Potency factor	
constrained-free#	93.33
constricted-spacious	80.00
deep-shallow	26.66
direct-indirect	40.00
hard-soft	46.66
heavy-light#	93.33
large-small#	73.33
long-short#	53.33
loud-soft	26.66
masculine-feminine	13.33
serious-humorous	20.00
severe-lenient	0.00
strong-weak#	93.33
tenacious-yielding	6.66
uncertain-definite	26.66

utilized in semantic differential questionnaire

TABLE XI (continued)

Polar adjectives	Percent agreement
Unassigned factor	
aggressive-defensive#	66.66
angular-rounded#	80.00
competitive-cooperative	66.66
formed-formless#	66.66
interesting-boring	40.00
new-old	0.00
sharp-blunt	53.33
stable-changeable	53.33
symmetrical-asymmetrical#	100.00
youthful-mature	20.00

utilized in semantic differential questionnaire

APPENDIX F

Numerical Weighting of Semantic Space Between Adjectives Arranged Alternately by Factor and Polarity

NUMERICAL WEIGHTING OF SEMANTIC SPACE BETWEEN ADJECTIVES ARRANGED ALTERNATELY BY FACTOR AND POLARITY

Eval.	relaxed	7 :6 :5 :4 :3 :2 :1	tense
Act.	aimless	1 :2 :3 :4 :5 :6 :7	motivated
Pot.	light	7 :6 :5 :4 :3 :2 :1	heavy
Un.	angular	1 :2 :3 :4 :5 :6 :7	rounded
Act.	simple	7 :6 :5 :4 :3 :2 :1	complex
Pot.	constrained	1 :2 :3 :4 :5 :6 :7	free
Un.	symmetrical	7 :6 :5 :4 :3 :2 :1	asymmetrical
Eval.	awkward	1 :2 :3 :4 :5 :6 :7	graceful
Pot.	large	7 :6 :5 :4 :3 :2 :1	small
Un.	formless	1 :2 :3 :4 :5 :6 :7	formed
Eval.	pleasurable	7 :6 :5 :4 :3 :2 :1	painful
Act.	slow	1 :2 :3 :4 :5 :6 :7	fast
Un.	unusual	7 :6 :5 :4 :3 :2 :1	usual
Pot.	long	1 :2 :3 :4 :5 :6 :7	short
Act.	deliberate	7 :6 :5 :4 :3 :2 :1	impulsive
Eval.	ugly	1 :2 :3 :4 :5 :6 :7	beautiful
Pot.	strong	7 :6 :5 :4 :3 :2 :1	weak
Act.	passive	1 :2 :3 :4 :5 :6 :7	active
Eval.	harmonious	7 :6 :5 :4 :3 :2 :1	dissonant
Un.	defensive	1 :2 :3 :4 :5 :6 :7	aggressive

Eval. = evaluative; Act. = activity; Pot. = potency; Un. = unassigned.

APPENDIX G

Semantic Differential Questionnaire Directions

QUESTIONNAIRE

The purpose of this questionnaire is to evaluate the meanings of different movement experiences to you by having you judge them against a series of descriptive scales. In filling in this questionnaire, please make your judgments on the bases of what these movement experiences mean to you and how you feel about them. You will judge each movement experience on a different page of this booklet; and you are to rate each movement experience on each of these scales in order.

Here is how you are to use these scales:

If you feel that the movement experience is very closely related to one end of the scale, you should place your "X" as follows:

fair X : _ : _ : _ : _ : _ : _ unfair

or

fair _ : _ : _ : _ : _ : _ : X unfair

If you feel that the movement experience is quite closely related to one or the other end of the scale (but not extremely), you should place your "X" as follows:

strong _ : X : _ : _ : _ : _ : _ weak

or

strong _ : _ : _ : _ : _ : X : _ weak

If the movement experience seems only slightly related to one side as opposed to the other side (but is not really neutral), then you should place your "X" as follows:

active _ : _ : X : _ : _ : _ : _ passive

or

active _ : _ : _ : _ : X : _ : _ passive

The direction toward which you check, of course, depends upon which of the two ends of the scale seems most characteristic of the movement experience

(go on to next page)

you are judging. If you consider the movement experience to be neutral on the scale, both sides of the scale equally associated with it, or completely irrelevant, unrelated to the movement experience, then you should place your "X" in the middle space:

safe __:__:__:X:__:__:__ dangerous

IMPORTANT:

(1) Place your "X" in the middle of the spaces, not on the boundaries.

(2) Be sure you check every scale for every movement experience -- do not omit any.

(3) Never put more than one "X" on a single scale.

Sometimes you may feel as though you have had the same movement experience before on the questionnaire. This will not be the case, so do not look back and forth through the items, Do not try to remember how you checked similar items earlier in this questionnaire. Make each item a separate and independent judgment. Work at fairly high speed. Do not worry or puzzle over individual items. It is your first impressions, the immediate feelings about the items, that are significant. On the other hand, do not be careless, because your true impressions are of importance.

APPENDIX H

Sample Page of Semantic Differential Questionnaire

relaxed	___:___:___:___:___:___:___	tense
aimless	___:___:___:___:___:___:___	motivated
light	___:___:___:___:___:___:___	heavy
angular	___:___:___:___:___:___:___	rounded
simple	___:___:___:___:___:___:___	complex
constrained	___:___:___:___:___:___:___	free
symmetrical	___:___:___:___:___:___:___	asymmetrical
awkward	___:___:___:___:___:___:___	graceful
large	___:___:___:___:___:___:___	small
formless	___:___:___:___:___:___:___	formed
pleasurable	___:___:___:___:___:___:___	painful
slow	___:___:___:___:___:___:___	fast
unusual	___:___:___:___:___:___:___	usual
long	___:___:___:___:___:___:___	short
deliberate	___:___:___:___:___:___:___	impulsive
ugly	___:___:___:___:___:___:___	beautiful
strong	___:___:___:___:___:___:___	weak
passive	___:___:___:___:___:___:___	active
harmonious	___:___:___:___:___:___:___	dissonant
defensive	___:___:___:___:___:___:___	aggressive

APPENDIX I

Individual Scale Scores Recording and Tabulation Sheet

INDIVIDUAL SCALE SCORES RECORDING AND TABULATION SHEET

_____

Subject #___

A G L

E A P U

_____

_____

_____

_____

_____

_____

_ _ _ _ Totals

F K P

APPENDIX J

Subject's Compiled Data Sheet

SUBJECT'S COMPILED DATA SHEET

Subject #_____ Group_____ Personality score_____

EVALUATIVE (preference) SCORES:

Effort		Imp.			Non.		Total Effort
Slash	(A)	____	+	(E)	____	=	____
Wring	(B)	____	+	(K)	____	=	____
Dab	(J)	____	+	(C)	____	=	____
Punch	(G)	____	+	(D)	____	=	____
Glide	(H)	____	+	(M)	____	=	____
Flick	(O)	____	+	(I)	____	=	____
Press	(N)	____	+	(L)	____	=	____
		____	+		____	=	____
		Total Imp.			Total Non.		Total Movement

ACTIVITY SCORES:

POTENCY SCORES:

APPENDIX K

Total Movement Preference Scores (Dance Subjects)

TABLE XII

TOTAL MOVEMENT PREFERENCE SCORES (DANCE SUBJECTS)

Subject number	Preference score	Subject number	Preference score
1	289	15	304
2	336	16	256
3	268	17	271
4	291	18	281
5	289	19	245
7	361	21	302
8	302	23	336
9	275	24	290
10	308	25	304
11	349	26	297
12	276	27	297
13	290	28	267
14	305	30	277

APPENDIX L

Total Movement Preference Scores (Sport Subjects)

TABLE XIII

TOTAL MOVEMENT PREFERENCE SCORES (SPORT SUBJECTS)

Subject number	Preference score	Subject number	Preference score
32	252	47	229
33	276	48	238
34	293	49	278
35	304	50	290
37	288	51	299
38	359	52	315
39	285	53	281
40	227	54	241
41	262	55	372
42	329	56	340
43	369	57	266
44	315	58	252
45	372	60	288

APPENDIX M

Individual Effort Theme Preference Scores (Dance Subjects)

TABLE XIV

INDIVIDUAL EFFORT THEME PREFERENCE SCORES
(DANCE SUBJECTS)

Subject number	Slash	Wring	Dab	Punch	Glide	Flick	Press
1	61	21	44	49	40	45	29
2	56	39	39	54	60	48	40
3	35	34	40	40	39	45	35
4	40	34	46	47	39	48	37
5	33	52	55	40	42	36	43
7	50	54	56	54	36	68	43
8	27	51	36	37	48	50	53
9	38	27	40	42	50	45	33
10	37	32	43	50	63	45	38
11	47	47	59	55	69	47	25
12	36	29	39	53	41	45	33
13	33	64	42	36	48	33	34
14	33	28	47	50	68	55	24
15	52	40	50	23	53	54	32
16	22	29	26	41	51	49	38
17	26	33	43	45	55	39	30
18	33	27	51	50	52	40	28
19	23	38	31	45	45	39	24
21	25	54	38	46	64	44	31

TABLE XIV (continued)

Subject number	Slash	Wring	Dab	Punch	Glide	Flick	Press
23	36	37	43	35	69	60	56
24	34	39	33	48	54	35	47
25	41	40	44	43	49	37	50
26	35	46	44	41	47	46	38
27	30	25	61	42	53	44	42
28	28	30	48	43	49	40	29
30	31	40	43	36	63	33	31

APPENDIX N

Individual Effort Theme Preference Scores (Sport Subjects)

TABLE XV

INDIVIDUAL EFFORT THEME PREFERENCE SCORES
(SPORT SUBJECTS)

Subject number	Slash	Wring	Dab	Punch	Glide	Flick	Press
32	43	33	32	23	41	39	36
33	35	31	41	37	52	41	39
34	40	41	43	41	48	50	30
35	45	48	43	42	48	44	34
37	37	42	39	31	42	61	36
38	43	53	53	56	66	53	35
39	27	43	47	34	63	33	38
40	30	28	37	35	49	27	21
41	28	40	37	20	52	47	38
42	39	31	55	59	55	59	31
43	47	59	45	46	59	56	57
44	44	31	37	62	48	59	34
45	63	45	42	62	60	57	43
47	34	34	25	25	61	31	19
48	16	31	37	34	52	40	28
49	33	29	43	43	55	39	36
50	44	42	17	42	63	26	56
51	52	25	42	46	47	47	40
52	46	44	49	44	43	48	41

TABLE XV (continued)

Subject number	Slash	Wring	Dab	Punch	Glide	Flick	Press
53	23	59	40	34	64	40	21
54	35	22	33	35	50	30	36
55	52	44	59	56	61	50	50
56	46	35	49	49	68	49	40
57	29	41	36	38	62	29	31
58	25	10	39	32	64	51	22
60	39	33	30	45	52	54	35

APPENDIX O

Non-implement and Implement Movement Preference Scores (Dance Subjects)

TABLE XVI

NON-IMPLEMENT AND IMPLEMENT MOVEMENT PREFERENCE SCORES
(DANCE SUBJECTS)

Subject number	Non-implement	Implement
1	144	145
2	186	150
3	144	124
4	142	149
5	153	136
7	176	185
8	144	158
9	151	124
10	162	146
11	187	162
12	147	129
13	151	139
14	184	121
15	178	126
16	145	111
17	134	137
18	142	139
19	131	114

TABLE XVI (continued)

Subject number	Non-implement	Implement
21	162	140
23	192	144
24	151	139
25	153	151
26	140	157
27	152	145
28	138	129
30	136	141

APPENDIX P

Non-implement and Implement Movement Preference Scores (Sport Subjects)

TABLE XVII

NON-IMPLEMENT AND IMPLEMENT MOVEMENT PREFERENCE SCORES
(SPORT SUBJECTS)

Subject number	Non-implement	Implement
32	118	134
33	147	129
34	156	137
35	148	156
37	124	164
38	192	167
39	142	143
40	119	108
41	118	144
42	173	156
43	180	189
44	154	161
45	192	180
47	128	101
48	119	119
49	138	140
50	155	135
51	143	156

TABLE XVII (continued)

Subject number	Non-implement	Implement
52	158	157
53	149	132
54	120	121
55	186	186
56	172	168
57	124	142
58	128	124
60	150	138

APPENDIX Q

Total Personality Scores (Dance Subjects)

TABLE XVIII

TOTAL PERSONALITY SCORES (DANCE SUBJECTS)

Subject number	Personality score	Subject number	Personality score
1	142	15	142
2	132	16	107
3	96	17	134
4	134	18	137
5	161	19	112
7	99	21	145
8	154	23	139
9	119	24	129
10	117	25	154
11	122	26	105
12	133	27	108
13	111	28	120
14	85	30	112

APPENDIX R

Total Personality Scores (Sport Subjects)

TABLE XIX

TOTAL PERSONALITY SCORES (SPORT SUBJECTS)

Subject number	Personality score	Subject number	Personality score
32	159	47	123
33	115	48	143
34	128	49	134
35	134	50	153
37	166	51	126
38	119	52	146
39	110	53	136
40	107	54	119
41	150	55	136
42	153	56	140
43	126	57	122
44	161	58	127
45	117	60	126