AN INVESTIGATION OF THE RELATIONSHIP BETWEEN INTOLERANCE OF AMBIGUITY AND AGGRESSION

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ABSTRACT

The relationship between overt aggression and intolerance of ambiguity was investigated. Thirty-two junior high school boys were chosen by one of their teachers because they were either one of the more overtly aggressive students or one of the better adjusted students. Each subject received an overt aggression rating according to a rating scale supplied to the teacher. Later the subjects were given the Rosenzweig Picture-Frustration Study and the Decision-Location Test of intolerance of ambiguity. No significant differences were found between the aggressive subjects and the well-adjusted subjects on either the Rosenzweig Picture-Frustration Study or the Decision-Location Test.

Chapter 1

INTRODUCTION

Statement of the Problem

The purpose of this paper is to explore a possible relationship between intolerance of ambiguous stimuli and overt aggression. There exists in the literature independent research on each of these concepts, but little research has been directed toward defining the possible relationship between stimulus ambiguity and overt aggression. The specific purpose of this paper is to determine the degree to which aggressive adolescent boys are intolerant of ambiguity in the stimulus field.

History of the Problem

The concepts of intolerance of ambiguity and aggression have developed independently. Therefore, the research on each concept will be discussed separately.

Intolerance of ambiguity. Although Freud has been credited with development of the concept of intolerance of

ambiguity, Freud gave credit to Bleuler (Freud, 1913, p. 29). According to Freud (1913), Bleuler first used the term, ambivalence (the antecedent term of ambiguity), to refer to a contrasting set of impulses within an individual (p. 29). Freud (1913) accepted this definition and developed it further. It was in Freud's discussion of taboo that he first explained ambivalence of emotion. He stressed the conflicting meanings inherent in taboo, that is, sacred or consecrated on the one hand, and uncanny, dangerous, forbidden, or unclean on the other. Freud hypothesized that the very act that was taboo for primitive man was the act most desired by primitive man. This ambivalence provided a possible basis for conflicting emotional attitudes and thus anxiety.

In 1917 Freud extended his definition of ambivalence of emotions to include the coexistence of opposing love and hate cathexes within the same person toward the same object. According to Freud, ambivalence is most intensely experienced when an individual is trying to cope with the oedipal phase of life, that is, the period in an individual's life during which he must learn to cope with ambivalent emotions toward parents. It is an important phase because during this time an individual develops socialized controls over his behavior

and achieves a masculine or feminine identification (Lampl-DeGroot, 1962, p. 97).

Else Frenkel-Brunswik (1949) accepted Freud's definition of emotional ambivalence, but she changed the term ambivalence, to ambiguity and postulated the existence of a personality trait of intolerance of ambiguity. Frenkel-Brunswik's major interests were antisemitism and general prejudice as expressed by the authoritarian personality. Intolerance of ambiguity was considered to be a trait commonly found in people with authoritarian personalities (Adorno, Frenkel-Brunswik, Levinson and Sanford, 1950).

Frenkel-Brunswik (1949) envisioned a continuum of the ability to recognize the coexistence of both negative and positive features in the same object. At one extreme were persons who, often in defiance of reality, had a tendency to see things as black or white and unambiguous. This idea was based on the assumption that in any situation an individual is confronted with a multiplicity of stimuli that he must organize. In most situations it would be impossible for an individual to process all the stimuli presented. Therefore, he selectively perceives some and blocks other stimuli. Frenkel-Brunswik believed that an individual who is intolerant

of ambiguity selectively perceives those stimuli in any situation that allow him to maintain an unambiguous, black or white view of the world. Frenkel-Brunswik assumed that an unambiguous perception of the world requires consistent blocking of certain aspects of reality resulting in distortion of the real world. Attention was focused on "reality-adequacy" vs. "reality-inadequacy." In this way, Frenkel-Brunswik shifted the discussion to perceptual ambiguity which she believed to be related to a broader psychological disturbance, prejudice.

In 1949, Frenkel-Brunswik hypothesized that to a prejudiced person who is intolerant of ambiguity "situations which are lacking in firmness are apparently . . . strange, bewildering and disturbing (p. 128)." She also suggested that "a combination of rigidity and chaos are present in the cognitive, emotional, and social fields (p. 132)."

Research studies have not confirmed the existence of a positive correlation between intolerance of ambiguity and authoritarianism. Davids (1955) found no significant correlation between scores on the F-scale and scores on visual or auditory ambiguity tests. In a follow up study, Davids (1956) failed to find a significant relationship between

authoritarianism and intolerance of ambiguity in situations which were highly ego-involving. Kenny and Ginsberg (1958) investigated the relationship between intolerance of ambiguity and authoritarianism. Subjects were given a battery of 12 different ambiguity measures and one authoritarian-submission test. The correlation between intolerance of ambiguity and authoritarianism was significant for only 2 of the 12 comparisons.

While there is no research yielding a definitive statement about the relation between intolerance of ambiguity and authoritarianism there is an apparent need for independent research on both of these variables. Apparently, intolerance of ambiguity and authoritarianism have dimensions which are as yet, untapped.

To summarize, Freud (1913) first used Bleuler's term ambivalence to refer to conflicting emotional attitudes. In 1917, Freud further developed the concept of ambivalence and used it to refer to opposing love and hate cathexes within the same person toward the same object. The term intolerance of ambiguity was first used by Else Frenkel-Brunswik in 1949 in reference to an inability to recognize the coexistence of both negative and positive features in an object, leading to

a distortion of the real world. Frenkel-Brunswik hypothesized that intolerance of ambiguity was a trait found in authoritarian personalities. Research has failed to confirm this hypothesis.

Motivational and developmental effects on perception. Intolerance of ambiguity falls under the general rubric of motivational effects on perception. While few theorists limit their discussion to the motivational effects of intolerance of ambiguity on perception, many discuss the belief that perception is influenced by motivation.

Vernon (1963) reviewed the research on the relation to perception of motivation and emotion and concluded that inherent personality needs are, indeed, related to perception. In other words, there is evidence to suggest that inherent needs, for example, a need for structure, measurably affect an individual's perception.

It has also been suggested that conceptual development affects perception. Werner (1957) discussed some of the characteristics which distinguish primitive from higher level mental development. Werner suggested that people at a primitive level of development (primitive natives and children) tend to view objects as wholes as opposed to distinguishing

details. This leads to a dependence on concrete qualities which does not result in abstract thinking.

It seems likely that individuals at a primitive level of conceptual development who think in predominately concrete terms would be intolerant of stimulus ambiguity. This belief is consistent with the notion that intolerance of ambiguity is a result of inadequate development.

Aggression. Darwin, in 1859, was one of the first to present functional aspects of aggression. According to Darwin (1859), the more aggressive males of a species, "those who are best fitted for their places in nature, will leave most progeny (p. 69)."

In modern psychology, McDougall (1926) and Freud (1933) both incorporated an instinct hypothesis of aggression into their theoretical frameworks. They were not, however, in complete agreement as to the specific nature of an aggressive instinct. One difference lay in their conception of instigations to aggression. Freud hypothesized an endogenous instigation to aggression, that is, one arising from within the organism, due to physiological processes which create tension that must be reduced. McDougall hypothesized an exogenous instigation to aggression, that is a stimulus

existing in the environment rather than in the individual. McDougall further hypothesized that aggression was most likely to occur when an individual was angered by interference with the goal response to any other drive.

Not all psychologists believe that aggressive behavior is due to an instinctual drive. Some believe that aggression is a learned response to certain stimuli. However, it is not always possible to separate completely theories emphasizing learning from theories emphasizing instincts or drives. For example, Holzberg and Rosner (1951) hypothesized that aggression is a response to frustration learned early in life. At the same time, one of their basic assumptions was that there exists within each individual a reservoir of aggression. This was one of Freud's assumptions. Dollard, Miller, Doob, Mowrer, and Sears (1939) believed that aggression is a learned response, but they also linked aggression to the frustration of some goal-directed behavior. McDougall (1926) made the same statement.

There are probably few, if any, psychologists today who insist that behavior is entirely learned or entirely innate. Contemporary psychologists emphasize the complexity of the

interaction between an individual's drives and what he learns in his environment.

> In brief, fighting (one form of aggression) is a complex phenomenon, taking many forms, and is stimulated and controlled by many different factors. Any 'single factor' explanation, such as that of instinct, is necessarily incomplete (Scott, 1973, p. 140).

In summary, aggression has historically been perceived as instinctual. More recently the trend has been toward a less simplistic explanation. Contemporary psychologists discuss the complex nature of aggression in terms of a variety of factors including innate drives and learned behavior. There is now an emphasis on the quality of the interaction between drives and learning.

Significance of the Problem

The aggressive behavior of students is one of the major problems facing schools today. There is an apparent need for information with respect to the dynamics of aggressive behavior. It is the goal of this paper to discover whether intolerance of ambiguous stimuli is positively related to aggression. The finding of such a relation would suggest that students exhibiting a certain kind of aggression might be less aggressive in well structured situations.

Chapter 2

REVIEW OF THE LITERATURE

Several issues are presented in this chapter. First, intolerance of ambiguity is operationally defined and placed in a theoretical framework. This is followed by a discussion of a series of investigations of intolerance of ambiguity. The discussion is then shifted to aggression. In Chapter 1, aggression was discussed in broad, general terms. In this chapter, the discussion of aggression focuses on frustration and impulse control. The final issue presented is a rationale for a positive correlation between intolerance of ambiguity and overt aggression.

Contemporary Definitions of Intolerance of Ambiguity

Since Frenkel-Brunswik's (1949) work with the concept of intolerance of ambiguity, a number of psychologists have investigated intolerance of ambiguity in a variety of settings. Unfortunately, no one definition of this phenomenon has been agreed upon by researchers. Hamilton (1957) quoted Brunswik's

1949 definition of intolerance of ambiguity, "'preference for familiarity, symmetry, definiteness and regularity, . . . a tendency toward black-white solutions, over simplified dichotomizing (p. 100).'" Ambiguity tolerance was defined by Rushlau (1957) as "the capacity inferred from behavior, to endure and deal with situations and relationships the structure of which is not clear (p. 2067)." For the purpose of this paper, intolerance of ambiguity was operationally defined as an inability to delay a decision when confronted with a situation in which there are few stimulus cues. The logic of this definition will be discussed.

Intolerance of Ambiguity: Stable Trait, Situation Specific, or Both

Intolerance of ambiguity is a perceptual phenomenon. For sometime there has been a debate as to whether perceptual variables in general, are traits, situation specific, or both (Frenkel-Brunswik, 1949). A definition of intolerance of ambiguity as a stable trait presupposes that an individual will be consistently intolerant of ambiguity in a variety of situations. This assumption leads to an emphasis on the personality of the individual perceiving the situation.

If, on the other hand, intolerance of ambiguity is defined as situation specific, then the assumption is that intolerance of ambiguity is created by the situation and thus, the elements of the situation become the focal point of research.

Frenkel-Brunswik originally conceived of intolerance of ambiguity as a personality trait. Since Frenkel-Brunswik's work, a few studies have focused on the situational variables and ignored the personality variables. However, a preponderance of research has included both situational and personality variables.

As will become apparent in the following discussion, people react differently to stimulus ambiguity. Apparently, people vary in the ability to cope with stimulus ambiguity. This finding is not revolutionary. However, it has been accompanied by the discovery of environmental and personality characteristics correlated with intolerance of ambiguity. Knowledge of such characteristics has resulted in a better understanding of intolerance of ambiguity.

Intolerance of Ambiguity: Research Studies

Situational variable vs. trait variable. Investigators have used various methods to investigate intolerance of

ambiguity. Smock (1955) used 115 male and female college students majoring in education or psychology. Each subject was required to organize partially structured stimuli in order to guess the object pictured. Smock was testing the hypothesis that psychological stress would result in relatively early guesses about the completed pictures. Smock focused on the situational variables. He created a psychologically stressful situation for half of his subjects by questioning their ability to perform and rejecting each in an interpersonal situation. The other half of the subjects were exposed to the experimenter's accepting, reassuring behavior aimed at producing feelings of achievement.

Smock did not find significant support for the hypothesis that psychologically stressful conditions produce premature decision making. One possible explanation is that individuals learn different responses to stress and, therefore, stress does not make all people intolerant of ambiguity. Smock's design implies that intolerance of ambiguity is dependent upon the immediate external environment rather than the personality of the individual. This is in direct opposition to the hypothesis that intolerance of ambiguity is a trait which develops as a result of certain past environmental

experiences. The fact that Smock's hypothesis was not supported is not surprising when his underlying assumption is considered, that is, when individuals are confronted with similar situations they will behave in a similar manner.

Smock (1955) approached intolerance of ambiguity as though it were ego-dystonic (situation specific). Hamilton (1957) approached the same concept in a different manner. Hamilton's study was designed to answer three questions: (a) Will a battery of tests of intolerance of ambiguity reveal individual differences in the avoidance of ambiguity? (b) Is there consistency in the responses made by the subjects on the different tests? (c) Are age, sex, intelligence, or occupation related to intolerance of ambiguity? Hamilton used 164 subjects, 40 of whom had no apparent psychological problems and 124 of whom suffered from either obsessions, conversion hysteria, neuroticism, or moderate to severe anxiety. Those with no apparent psychological problems formed a control group and those with diagnosed psychological problems formed an experimental group. Hamilton used a test battery consisting of ten tests designed to measure intolerance of ambiguity. Out of the ten tests, only one failed to yield a significant difference between the experimental group and the control group.

The test which failed to discriminate involved sorting 44 wooden blocks of varying sizes and shapes. Fourteen blocks had rectangular and circular features in the same block. The categories were "Circular," "Rectangular," "I can't decide which," and "To be sorted afterwards." Placing a relatively large number of blocks into the "I can't decide which" category was used as a measure of intolerance of ambiguity. Hamilton offered no explanation for the failure of this test to discriminate. One explanation could be that this test was not a valid measure of intolerance of ambiguity because an individual who was intolerant of ambiguity would be more likely to see only one characteristic of a block containing two conflicting characteristics and, therefore, would not be likely to hesitate in categorizing it. Perceiving a block in this manner would be consistent with Hamilton's definition of intolerance of ambiguity, that is, "a tendency toward black-white solutions, over simplified dichotomizing (p. 200)."

Hamilton also found that there were consistent differences among the subjects in the experimental group. In general, he found that the higher the degree of anxiety associated with the particular mental illness, the higher

the intolerance of ambiguity as measured by these ten tests. In addition, Hamilton found that his subjects were consistent in their responses to ambiguous stimuli. This provides evidence for the existence of a "relatively permanent and pervasive organization, corresponding to some kind of need state or motivational 'set' of the individual (1957, p. 205)." It further implies that intolerance of ambiguity is a personality trait not situation specific. Hamilton theorized that,

> (F)unctionally, the consistent perceptual attitude operative in all the situations has as its object the control of ambiguity and uncertainty--the control of indefiniteness, unstructuredness and instability to a level required by a central principle of personality organization or motivational need (p. 205).

Rushlau (1957) sought to discover whether intolerance of ambiguity was a stable trait. Using 76 psychology undergraduates as subjects, Rushlau first divided his subjects into ambiguity tolerant and ambiguity intolerant groups by means of the Berkeley Questionnaire. Then he randomly assigned a structured or an unstructured presentation of instructions for an experimental task to the members of each group. The dependent variables were the scores of the subjects under the varying conditions of the design on seven tasks. The tasks used were: (a) Art preference, (b) Humor preference,

(c) Generalization, (d) Verbal concept formation, (e) Figure relationship, (f) Syllogistic reasoning, and (g) Problem-solving.

Rushlau found significant differences between the scores of the ambiguity tolerant group and the scores of the ambiguity intolerant group on the tests of humor preference, generalization, figure relationship and problem-solving. Differences in instructions affected the scores on tests of figure relationships and problem-solving. The concept formation test revealed differences that were based on intellectual differences. Rushlau interpreted the covariance in this study as providing empirical proof of the existence of ambiguity intolerance as a trait.

In 1954 Martin tested the relationship between intolerance of ambiguity in an interpersonal situation and the length of time needed to see the aniseikonic illusion. Martin presented his subjects, 63 male college students, with various tasks having vague general instructions. He used the number of questions asked by each subject as a measure of relative tolerance of ambiguity in an interpersonal situation. Martin's results supported his hypothesis that subjects who are intolerant of ambiguity in an interpersonal situation will take a

longer time to see the aniseikonic illusion and see it as of small magnitude.

To summarize, it appears that intolerance of ambiguity is a personality trait. People differ in their ability to cope with ambiguity and the differences in this ability are not situation specific.

Anxiety and intolerance of ambiguity. Recent research has indicated that anxiety and intolerance of ambiguity are positively correlated. Soueif (1958) began with the general assumption that varying amounts of tension accompany different social classes in India. More specifically, Soueif assumed that the lower the social status the higher the level of tension. These assumptions lead to the hypothesis that the lower the social status, the greater the level of tension and, therefore, the greater the intolerance of ambiguity.

Soueif used extreme responses on a questionnaire as a measure of intolerance of ambiguity. Soueif designed a 70-item questionnaire on characteristics of personal friends. Subjects were asked to consider each characteristic on the list and determine whether it was "very necessary," "desirable," "indifferent," "undesirable," or "definitely opposed" with respect to a friendship. The measure of intolerance of

ambiguity was the number of times a subject chose either "very necessary" or "definitely opposed."

Soueif made four specific predictions. He found strong support for a prediction that adolescents were more intolerant of ambiguity than adults, that is, adolescents chose either "very necessary" or "definitely opposed" more often than adults. This finding was significant at the .001 level for Moslem adolescents and at the .02 level for Christian adolescents. Partial support was found for a second prediction, that Christians (as members of a religious minority in India) were more intolerant of ambiguity than Moslems, that is, Christian female adolescents and adults made significantly more extreme responses than their Moslem counterparts to the .02 level of significance, but neither Christian adult males nor Christian adolescent males made significantly more extreme responses than their Moslem counterparts. A third prediction, that females would make more extreme responses than males was supported in regard to adults. For Moslems this prediction was significant beyond the .02 level and for Christians, it was significant beyond the .001 level. This prediction did not hold true for adolescents. Soueif's main prediction that members of the lower middle class would make more extreme

responses than members of the upper middle class was supported at the .001 level.

On the basis of these findings, Soueif concluded that there is an inverse correlation between intolerance of ambiguity and anxiety.

Further support for a positive correlation between intolerance of ambiguity and anxiety was provided by Dibner (1954), Smock (1957), and Hamilton (1957). Dibner used 40 neuropsychiatric patients in a Veterans Administration Hospital as subjects. Twenty patients were exposed to an ambiguous interview condition (the interviewer did not actively structure the interview) and 20 patients were exposed to an unambiguous interview condition (the interviewer actively structured the interview). Five measures of anxiety were used: (a) Changes in the palmar skin conductance, (b) ratings of anxiety by a clinical judge reading samples of the interview transcript, (c) the patient's own report of tension by means of a modified check list, and (d) two different sets of indices of disturbed speech. Dibner hypothesized that the patient's anxiety would be positively related to the degree of ambiguity of the interviewer's behavior. This hypothesis was supported on four out of the five measures of anxiety.

Smock (1957) hypothesized that anxiety represented a learned response to psychological or stimulus ambiguity. Smock found support for this hypothesis by exploring the relationship between intolerance of ambiguity and two functional properties of anxiety, generalization and speed of perceptual closure. He measured intolerance of ambiguity by means of a Decision-Location Test as developed by Etzel (1953). This test involved showing a series of 15 cards, each card becoming progressively less ambiguous through the addition of more stimulus cues until the final card containing a picture of a specific object was shown. The subject was asked to guess the object pictured as soon as he had enough stimulus cues to do so. Smock, as did Etzel, hypothesized that individuals who were intolerant of ambiguity would tend to respond early in the series of cards. Smock used perseveration and response latency on a recognition task as a measure of anxiety. The results showed that subjects who responded early on the Decision-Location Test manifested significantly more response perseveration and shorter latency of response on the recognition task than those subjects who tended to respond in the middle of the Decision-Location Test cards.

Thus, subjects who were evaluated as being intolerant of ambiguity according to the Decision-Location Test demonstrated higher anxiety as measured by response perseveration and response latency. Smock found no evidence to suggest that this difference could be related to intelligence as the correlations between intelligence test scores and the experimental measures were insignificant.

As previously mentioned, Hamilton (1957) found that the higher the degree of anxiety associated with a particular mental illness, the higher the intolerance of ambiguity. Taken as a whole, these three studies indicate that anxiety is a concomitant factor in stimulus ambiguity for those individuals who are intolerant of ambiguity.

The studies reviewed thus far involve two types of ambiguous situations. One situation entails presenting a subject with insufficient stimulus cues upon which to base a decision. A second, more common situation is one in which the stimulus cues are conflicting or opposing, making a definite decision difficult. In this case, subjects must ignore or pass off as insignificant some of the cues in order to arrive at a decision.

Which of these two ambiguous situations an experimenter chooses not only determines the kinds of tests he employs, but more important, it determines the behavior expected from a subject who is intolerant of ambiguity. For example, Smock (1955) employed a situation in which there were too few stimulus cues on which to base a decision. Smock expected subjects who were intolerant of ambiguity to make an early decision rather than to delay making a decision until more stimulus cues were presented. Thus, delay in making a decision was the determining factor in this type of ambiguous situation. An example of the expectations inherent in the second type of ambiguous situation can be seen in Martin's (1954) study. Martin gave vague instructions to a task and then scored the number of questions asked by the various subjects. Martin expected the subjects who were intolerant of ambiguity to ask relatively more questions. Thus, a need for external structure was the determining factor.

It may appear that the expectations which accompany these two kinds of ambiguous situations are conflicting. In one situation, an individual is considered to be intolerant of ambiguity because he is unable to delay making a decision, while in the second situation, the individual who delays

making a decision by asking questions is also considered to be intolerant of ambiguity.

A closer look at this apparent inconsistency shows that it does not exist. The reaction to a lack of structure is the key factor in both of these ambiguous situations. In the first situation where too few stimulus cues are presented, the subject is confronted with unstructured stimuli. In order to delay making a response, the individual has to be able to cope with the lack of structure. The individual who makes an early decision, at the same time structures the situation. In the second situation where the individual is presented with conflicting or opposing cues, the individual who asks many questions wants the situation to be structured for him. Thus, the expected behavior for individuals who are intolerant of ambiguity has a similar basis in these two different situations.

Soueif's (1958) study did not involve either of these types of ambiguous situations. Soueif did not present his subjects with an ambiguous situation because he hypothesized that their life involved varying degrees of tension which produced insecurity, which in turn produced intolerance of ambiguity. As previously mentioned, Soueif's measure of

intolerance of ambiguity involved answers to a questionnaire. Subjects who made extreme responses, those who saw things as black or white but not gray, were considered to be intolerant of ambiguity. The need to see things as black or white is another manifestation of the need for structure.

Having considered the importance of the variable, structure, in working with intolerance of ambiguity, it is now possible to account further for the results of Hamilton's (1957) study. A detailed description of Hamilton's study has already been made. One of the ten tests used by Hamilton failed to yield any significant difference between the control and experimental groups. This test involved sorting blocks by shape. Fourteen blocks were rectangular, five were circular and 25 incorporated both rectangular and circular features. The subjects were asked to sort the blocks into three categories: "Rectangular," "Circular," and "I can't decide which." Subjects who placed a relatively high number of blocks in the "I can't decide" category were considered to be intolerant of ambiguity. It is not surprising that this test failed to yield a significant difference. It is more than likely that an individual who was intolerant of ambiguity and needed structure would sort the blocks into one of the definite

categories rather than in the "I can't decide which" category. Sorting blocks into the "I can't decide which" category represents a delayed response.

Summary of research findings. The major conclusions which were supported by the research cited in this chapter are as follows: (a) intolerance of ambiguity is a personality trait, and (b) intolerance of ambiguity is directly related to anxiety.

Aggression

Aggression is one of several responses to frustration. There are three general ways to express aggression: (a) extrapunitive, (b) intropunitive, or (c) indirect (Kimble and Garmezy, 1963, p. 465). Extrapunitive aggression refers to the expression of hostility outwardly and directly toward the frustrating agent. Intropunitive aggression is aggression directed toward oneself. Indirect aggression is expressed outwardly as in extrapunitive aggression, but it is expressed in a disguised fashion. This paper is concerned only with extrapunitive aggression which is impulsive or uncontrollable.

It is assumed that an individual learns to control his impulses through an interaction with the environment. Furthermore, an individual controls his inclination to act

aggressively when faced with frustration, to the extent to which he has learned to do so.

Summary

The results of previous studies have suggested that intolerance of ambiguity is a personality trait and is correlated with anxiety. On the surface the studies presented seem very different from one another and the findings seem investigator specific. However, an analysis of the methodologies of these various studies revealed a basic similarity, that is, implied by the methodologies of these different studies is the implication that intolerance of ambiguity involves an inability to cope with an unstructured situation. Subjects who were intolerant of ambiguity and who found themselves in a situation in which the amount of structure provided was controlled by an external agent attempted to get the agent to provide more structure. Subjects who were intolerant of ambiguity but forced to make a decision in an unstructured situation, apparently escaped the situation by making an early decision even when an early decision was accompanied by a low probability of being correct.

This analysis makes it clear that situational variables are important to the extent to which they determine the form

of expression of intolerance of ambiguity. The focus of this paper is on the situation in which it is advantageous to delay making a decision. In this study, intolerance of ambiguity was defined as an inability to delay making a decision even when the probability of making a correct decision was so low as to warrant against making a decision. This inability to delay making a decision can be described as poor impulse control.

There are a variety of theories attempting to explain aggression. This paper has not dealt with the theoretical aspects of aggression but has concentrated instead on aggression as a behavioral manifestation of a lack of impulse control. A lack of impulse control is the proposed link between intolerance of ambiguity and aggression. The specific hypothesis of this paper that there is a positive correlation between intolerance of ambiguity and overt aggression is based on the premise that it is possible for two behaviors having the same behavioral base to be related to each other.

Chapter 3

DESIGN AND PROCEDURE

Statement of the Problem

This study was designed to explore a possible relationship between intolerance of ambiguity and overt expression of aggression. It was presupposed that both intolerance of ambiguity and overt aggression involve a lack of impulse control and that this lack of impulse control is the basis for a positive relationship between these variables. The specific hypothesis was that aggressive boys, as determined by teacher ratings and the Rosenzweig Picture-Frustration Study, would make significantly earlier responses on a Decision-Location Test than would well adjusted boys. The minimum level of significance was set at .05.

Population and Sample

The sample for this study was drawn from seventh-, eighth- and ninth-grade boys in a junior high school in Oakland, California. Over 80 percent of the student body of the

school was black. The socio-economic status of a majority of the students was lower middle class.

The subjects for the study were thirty black boys, seven white boys and one oriental boy. The subjects were selected on the basis of teacher ratings. The teachers were asked to select five of the most aggressive students and five of the best adjusted students and to rate each of these students according to a rating scale provided by the experimenter. It was hoped that most of the 40 teachers would cooperate, thereby yielding more than one teacher rating per subject. However, only four teachers cooperated, resulting in one teacher rating for most subjects. For this reason the Rosenzweig Picture-Frustration Study was included as a second measure of aggression. Due to illness and changes in residency of the subjects, the final sample contained 27 black boys, three white boys and one oriental boy, a total of 32 subjects, with a mean age of 14 years, 2 months.

Significance of socio-economic status. To determine whether possible differences between the High Aggression group and the Well Adjusted group could be attributed to socio-economic status, the groups were compared on the basis of father's occupation. Five major occupational groups were

derived from the U.S. Bureau of the Census (1972): (a) Professional, (b) Managerial (including farm managers), (c) Clerical, (d) Craftsmen, and (e) Service workers (including private household workers and farm laborers).

No significant U value was found with respect to the occupation of the father (in some cases the mother because the father's whereabouts was unknown). Thus, any differences between the groups were due to a variable or variables other than socio-economic status.

Methodology

Instruments. The instruments used in this study were: (a) a teacher's rating scale, (b) the Rosenzweig Picture-Frustration Study, and (c) a Decision-Location Test of intolerance of ambiguity devised by Etzel (1953).

The teacher's rating scale consisted of five statements describing kinds of overt aggression that are likely to occur in the classroom. Each statement was followed by a series of five words: never, rarely, sometimes, frequently, and constantly. Thus each of the five behaviors could be rated on the basis of frequency of occurrence in the classroom (Appendix A).

The Rosenzweig Picture-Frustration Study was used to obtain a second measure of aggression. The test is partly a projective test and Rosenzweig (1960) stated that he could not decide on the basis of the test data alone whether it taps (a) overt behavior, (b) fantasy behavior, or (c) opinions of how one ought to behave. According to Bjerstedt (1965), there are some problems with the validity and reliability of this test, but these problems are shared by most of today's personality tests. Bjerstedt concluded that there is no competing test that can claim to have more reliability or validity.

A Decision-Location Test (DLT) was first designed by Etzel (1953). It is an adaptation of the Incomplete Pictures subtest of the Minnesota Preschool Scale. A standardized DLT does not exist, but Levitt (1953) and Smock (1957) designed and tested their own DLT materials. Levitt tested the reliability of his DLT materials by comparing the results on two different series of pictures. He found a correlation of .66. Smock found further support for this type of measure when he found a correlation of .59 between the two series of pictures he developed.

A DLT was chosen as a measure of intolerance of ambiguity because it determines whether a subject can delay making a decision. The DLT designed for this study consisted of five different sets of 15 cards each 5" x 8" (see Appendix B). The reliability among these sets of cards ranged between .88 and .01 (Table 1). Smock's DLT series served as a guide in constructing the pictures for each series.

Table 1

Reliability of Decision Location Test
Pearson's Product Moment Correlations
Between Series A, B, C, D, E

	B	C	D	E
A	.88**	.33	.22	.29
B		.01	.21	.27
C			.26	.21
D				.39*

*Significant at the .05 level.

**Significant at the .001 level.

The following instructions were given to the subjects:

> I am going to show you a series of cards. The first card of the series always has just a few elements of a complete design on it; but each card gives you a few additional hints or clues as to what the final design or picture is going to be. Here is a sample. (Show sample.) Do you understand?
>
> Here is your answer sheet. Write your name. Now look at the first column of numbers. Each number has a blank beside it. You must write either "not yet" for "I don't know the answer yet," or what you think the final picture will be.
>
> (Repeated before each series.) Remember there is only one design or picture on each card. All the details belong to a complete design which is on the final card. Here is a list of _____ (Appendix C). One of these is the correct answer, that is, one of these objects named on this list is pictured on the final card of this series. You have 10 seconds to look at this list.

Procedure

The subjects were given the Rosenzweig Picture-Frustration Study in two randomly assigned groups, Group 1 and Group 2. Due to the variation in ages, both the adult and children's form of this test were used and scored accordingly. However, in analyzing the data, no distinctions were made between adults and children. A second independent scorer was used as a reliability check. A Pearson product-moment correlation

of .71 indicated a relatively high degree of interrater reliability (Table 2).

Table 2

Reliability of Rosenzweig P-F Study

r	Level of Significance
.71	.001

The DLT was administered to groups of five, again the subjects being randomly assigned to groups. The order of the five series of cards was also randomized. Each subject was given a score which represented his first guess on each series. For example, if an individual guessed "dog" on card 5, then he received a score of 5 regardless of whether he was correct. Thus, a high score would represent tolerance of ambiguity, that is, an ability to delay responding until sufficient cues were provided, while a low score would represent intolerance of ambiguity or a lack of ability to delay the response. The DLT yielded more than one score to be discussed in the following section on results.

Chapter 4

RESULTS

The measures used in this study were teachers' ratings, the E-score on the Rosenzweig Picture-Frustration Study and three scores on a Decision-Location Test of intolerance of ambiguity. The Mann-Whitney U test was used to test the difference between the aggressive group and the well-adjusted group on the measures used.

Teachers' Ratings

To increase the probability of each teacher using the same criteria in selecting subjects, a rating scale was provided (Appendix A). This scale enabled each teacher to objectively represent the behavior of five of the most aggressive and five of the best-adjusted students.

Rosenzweig Picture-Frustration Study: E-Score

The U value revealed that although the difference was in the expected direction, that is, the subjects in the aggressive

group tended to score higher ($\bar{X}$ = 13.76) than the well-adjusted group ($\bar{X}$ = 11.52), the difference was not significant (Table 3).

Table 3

Differences Between the High Aggression Group and the Well-Adjusted Group as Measured by the Mann-Whitney U Test

	U Values		Level of Significance
	High	Low[1]	
Teachers' Ratings	30	255	.001
Rosenzweig P-F Study E Score	85	153	Not Significant
Decision-Location Test			
Mean First Response	85	153	Not Significant
Mean Correct - First[2]	108	147	Not Significant
Individual Series			
A	99	156	Not Significant
B	101	254	Not Significant
C	94	146	Not Significant
D	104	152	Not Significant
E	144	111	Not Significant
Group 1 vs. Group 2	135	117	Not Significant

[1]High aggression group and low (well-adjusted) group.

[2]Mean correct response minus the mean first response for all series.

Decision-Location Test of Intolerance of Ambiguity

The five sets of cards were analyzed separately and as a group with respect to (a) the occurrence of the first response (see Table 4 for mean values), and (b) the difference between the first response and the first correct response. Neither of these measures revealed any significant differences between the aggressive group and the well-adjusted group (Table 3). The first of these measures was an intolerance of ambiguity score. The second measure was used to determine whether the well-adjusted group was able to make earlier correct responses. Lack of a significant difference on either of these measures indicates no difference between the groups with regard to intolerance of ambiguity or ability to make an early correct response.

Table 4

Mean Scores on the Decision-Location Test of Intolerance of Ambiguity

Group	Series				
	A	B	C	D	E
Well-Adjusted	3.88	1.88	3.41	3.70	3.94
Aggressive	4.80	2.00	4.80	5.00	3.46

As a test of reliability of the various sets of cards, correlations between the sets were calculated. Only two correlations were significant (Table 1). A correlation of .88 was found between sets A and B and .39 between sets D and E. The former correlation was significant at the .001 level and the latter correlation was significant at the .05 level. This indicates relatively high reliability on two sets of cards, that is, two sets of cards, A and B and D and E, elicited consistent responses from subjects.

Chapter 5

DISCUSSION

No support was found for the main hypothesis of this paper. Those subjects rated high on overt aggression did not make earlier responses on a Decision-Location Test measuring intolerance of ambiguity than those subjects rated well adjusted. There are several possible explanations for this finding: (a) overt aggression is not related to intolerance of ambiguity; (b) the subjects were not sufficiently differentiated on the basis of overt aggression; (c) a Decision-Location Test is not an adequate test of intolerance of ambiguity; or (d) overt aggression as identified by teachers is not synonymous with a "lack of impulse control" view of aggression.

There is, of course, a possibility that children who are overtly aggressive are not necessarily intolerant of ambiguity. However, before this can be determined certain weaknesses present in the study need to be eliminated or minimized.

One of the weak points of the study and a possible explanation of the results, was a failure to differentiate subjects on the basis of overt aggression. Due to a lack of cooperation on the part of the teachers, only one teacher rating per subject was obtained. The U values for the Rosenzweig Picture-Frustration Study indicated that the groups were not significantly different with respect to aggression. This suggested that the teachers' ratings may have been unreliable. However, those students who were judged to be aggressive did achieve higher E-scores on the Rosenzweig Picture-Frustration Study than did those subjects who were judged to be well adjusted. This implies that there is some, but not total, overlap between the behaviors being measured by these two instruments.

A second weakness and, therefore, possible explanation of the results in this study was, perhaps, the DLT measure. There has been evidence cited (Levitt, 1953; Smock, 1957) on the reliability of the DLT and the present study indicated that significantly high correlations existed between two pairs of card series in this test to support claims of reliability. However, the validity of this measure is more difficult to measure. The DLT logically fit the framework of

the study with regard to the population and the operational definition of intolerance of ambiguity. Therefore, the use of this test did not seem to be a weakness although it would be interesting to create an actual ambiguous classroom situation and compare the performance in such a situation to the performance on the DLT. This comparison would serve as a measure of the validity of the DLT.

A third weakness was, perhaps, in presupposing that the subjects selected by a teacher as being overtly aggressive would all be exhibiting aggressive behavior which could be attributed to a lack of impulse control. It is possible that overt aggression as identified by teachers is not synonymous with the view of aggression as a lack of impulse control.

Having discussed three possible explanations of the results of this study, the explanation which seems most plausible is the probable lack of differentiation between subjects on the basis of overt aggression stemming from a lack of impulse control. This differentiation was a critical requirement of this study. Discovering a relationship between overt aggression and intolerance of ambiguity depended on successful differentiation of groups. Since there was a question as to whether the subjects were reliably differentiated on the

basis of overt aggression no conclusions can be drawn concerning the nature of a possible relationship between aggression and intolerance of ambiguity.

The hypothesis that there is a positive correlation between overt aggression and intolerance of ambiguity rests on the presupposition that both of these behaviors involve a lack of impulse control. A DLT was chosen as a measure of intolerance of ambiguity because it required delaying a decision which seemed logically related to the control of impulses. In retrospect, a DLT still seems a sound choice. However, aggression due to a lack of impulse control was apparently not easily discriminated. Failure to find a significant difference between the aggressive group and the well-adjusted group on the Rosenzweig Picture-Frustration Study implied that the teachers had failed to adequately discriminate between aggressive boys and well-adjusted boys. This is not to say that the teachers did not do their best. The perception of aggression or good adjustment can be effected by numerous variables, many of which were not controlled by simply providing the teachers with a rating scale.

To replicate this study, it is suggested that the investigator start with two groups of subjects who have been judged

to be significantly different with regard to impulse control. This could be done by using several observers to record specific manifestations of a lack of impulse control. Observations should be made on several occasions to increase the reliability of the judgments. After two groups are selected, one containing subjects who are able to control their impulses and one containing subjects who are unable to control their impulses, A DLT could be given to determine whether these subjects also differ with respect to intolerance of ambiguity.

Another way of discriminating between children who have impulse control and children who lack impulse control would be to expose children to an experimental test of impulse control. For example, each subject could be shown some attractive toys, but told that he must not play with them. The experimenter could then leave the room and observe through a one-way mirror whether the subject plays with the toys.

The above suggestions are two out of many alternatives for investigating the original problem cited in this paper. This paper failed to answer any of the proposed questions concerning a relationship between intolerance of ambiguity

and aggression. However, this paper succeeded in revealing the complexity of the problem and possible approaches to be tested in the future.

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APPENDIXES

APPENDIX A

RATING SCHEDULE

RATING SCHEDULE

Student's Name _____ Age _____

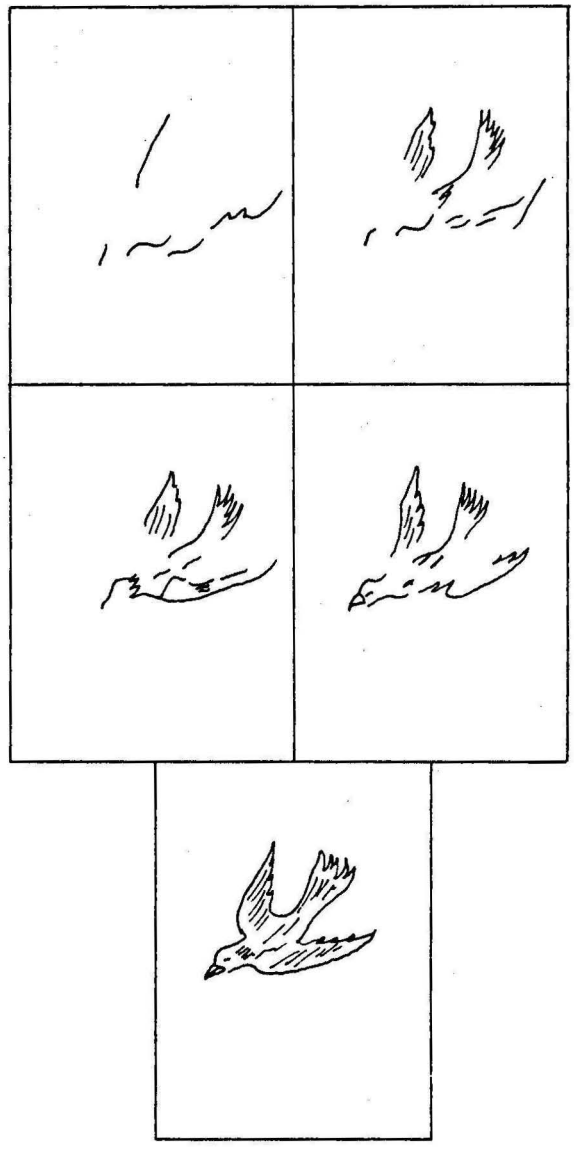
Teacher's Name _____

Here is a list of five specific behaviors. Please rate this student's characteristic behavior by circling the word that best describes this student.

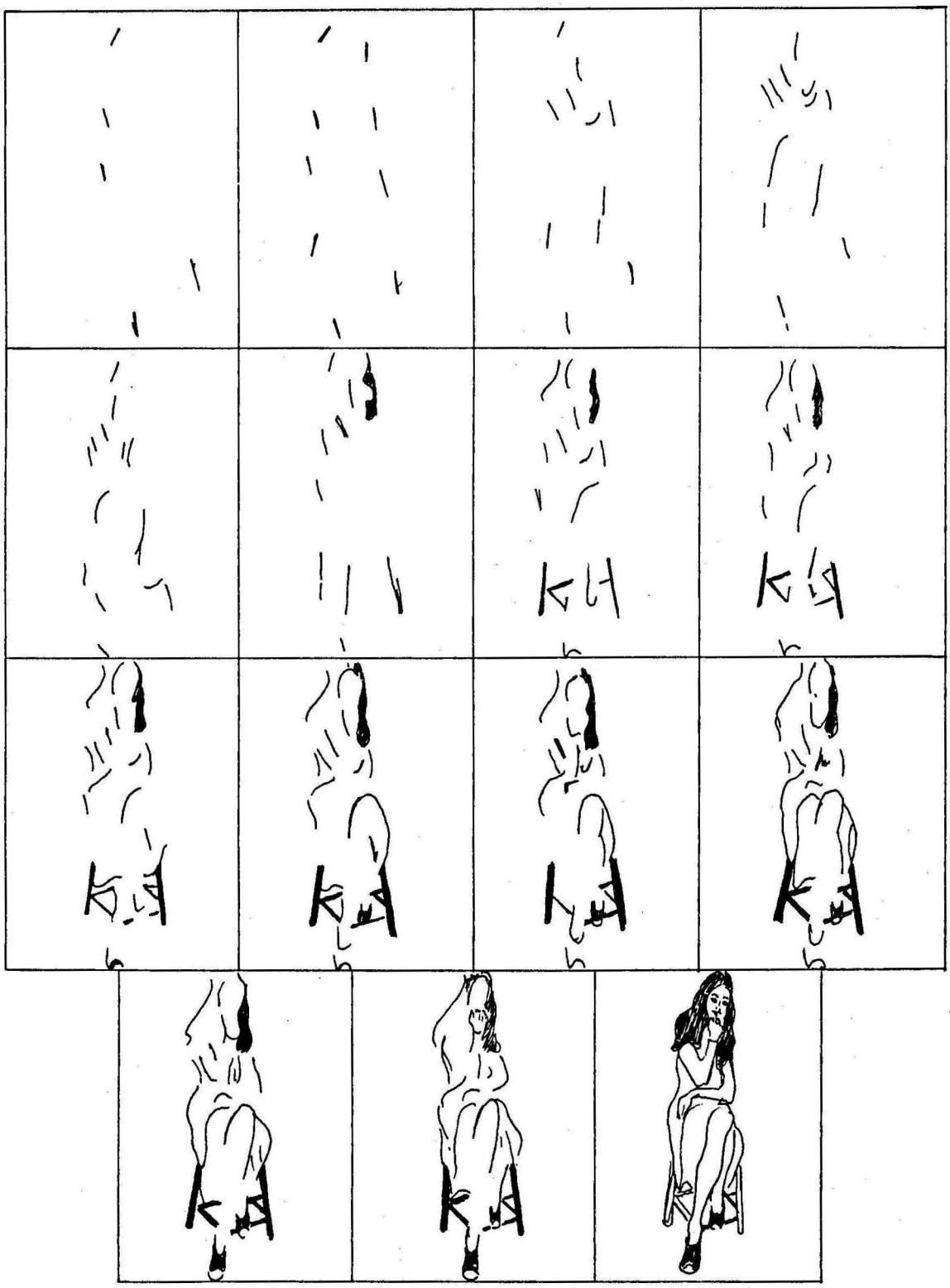
1. Makes physical attacks on other students.	never rarely sometimes frequently constantly
2. Gets out of seat without permission.	never rarely sometimes frequently constantly
3. Talks back to you.	never rarely sometimes frequently constantly
4. Responds to requests with a physical reaction such as slamming a book down, slamming a door, throwing something, etc.	never rarely sometimes frequently constantly
5. Challenges your authority.	never rarely sometimes frequently constantly
6. Is difficult to control.	never rarely sometimes frequently constantly

APPENDIX B

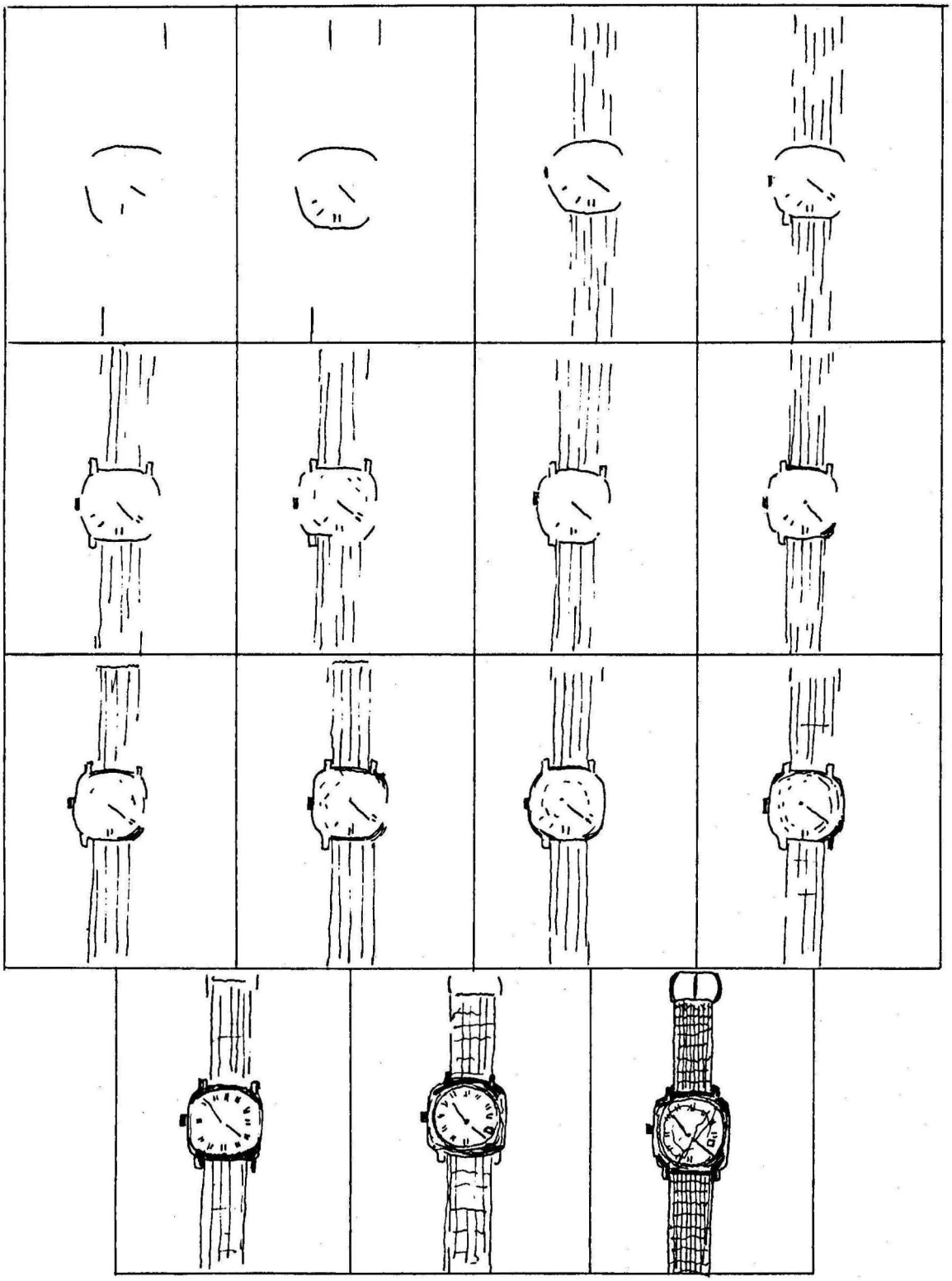
SERIES A, B, C, D, E IN THE DECISION-LOCATION TEST



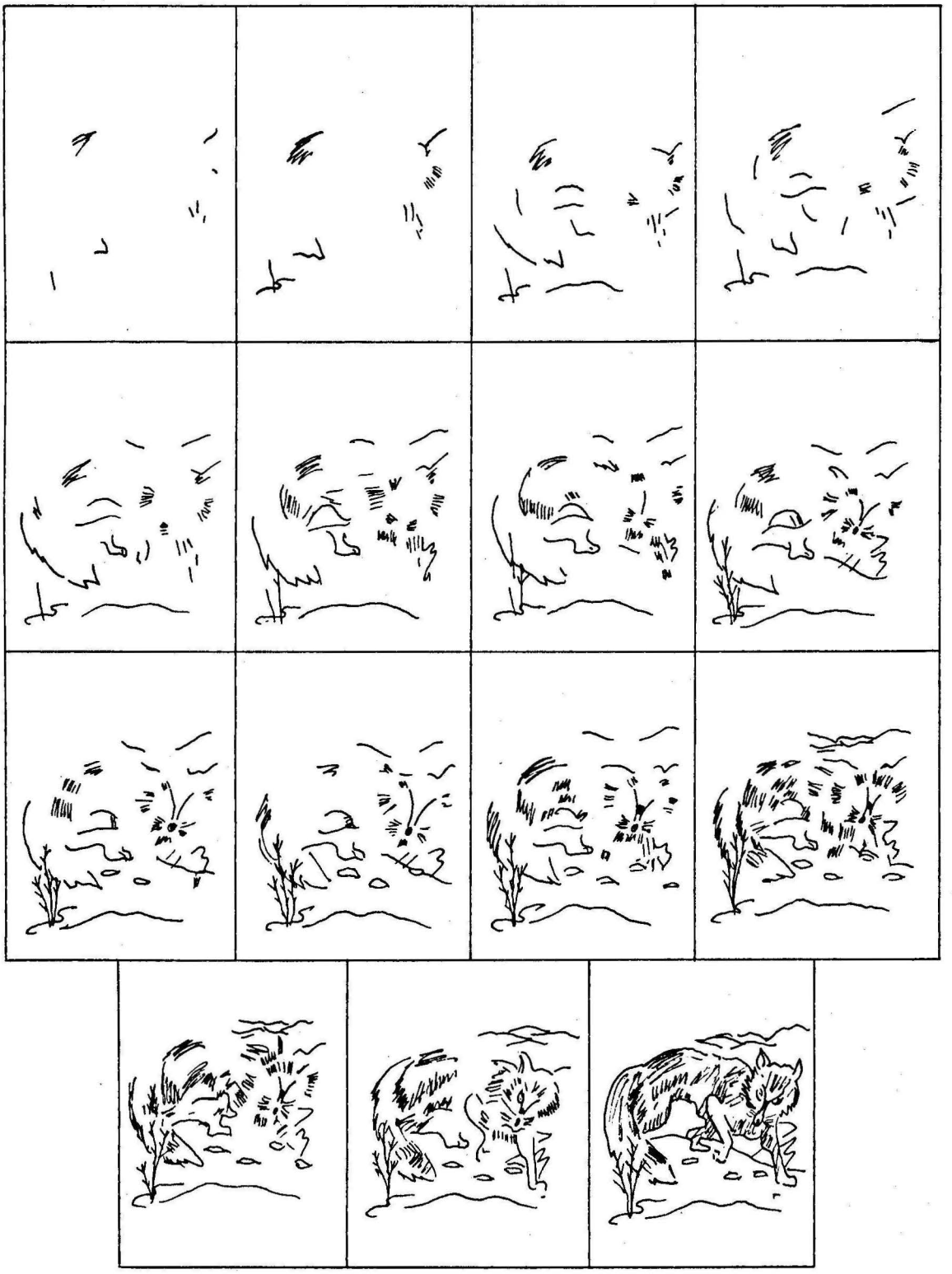
Sample



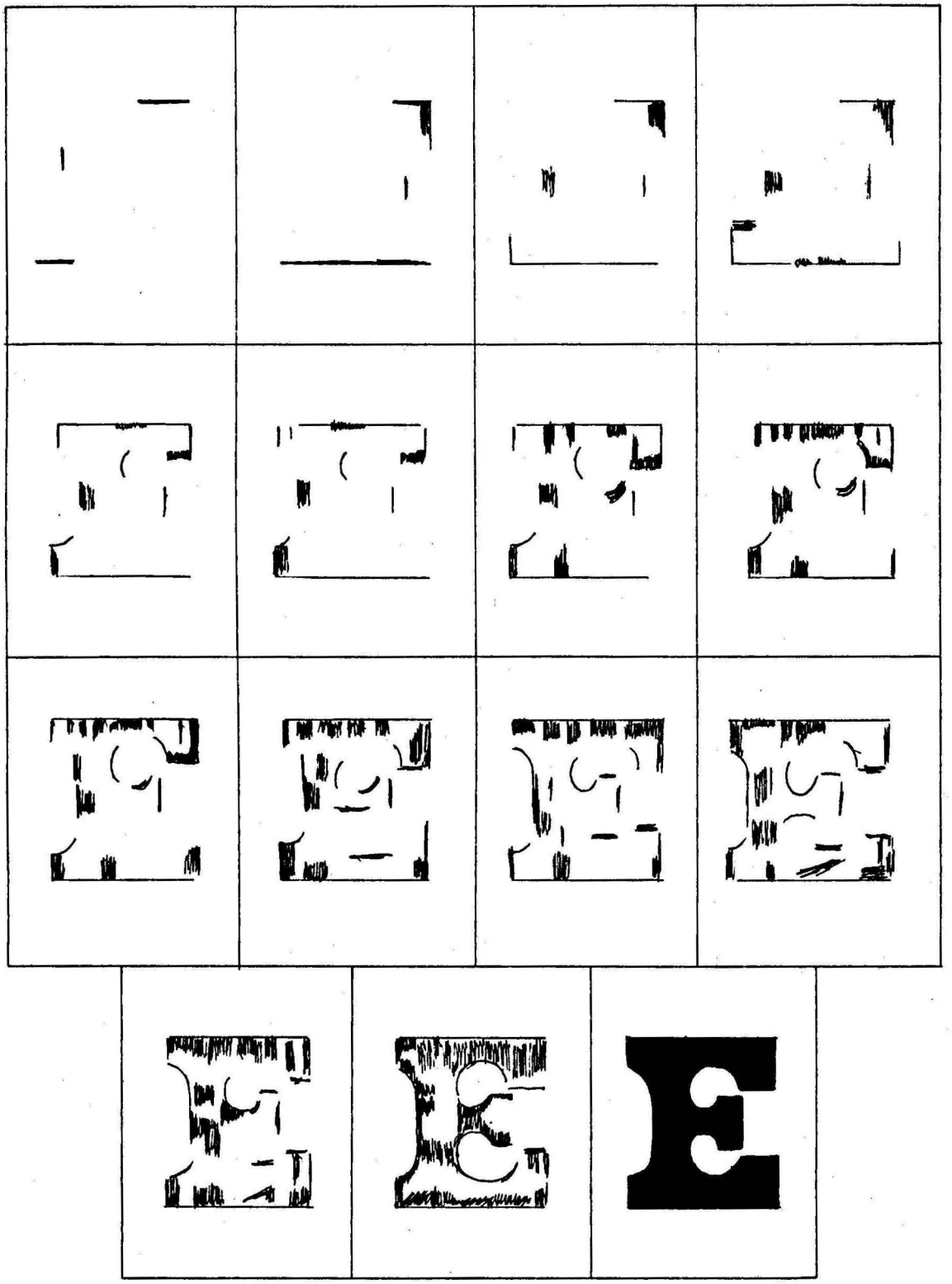
Series A



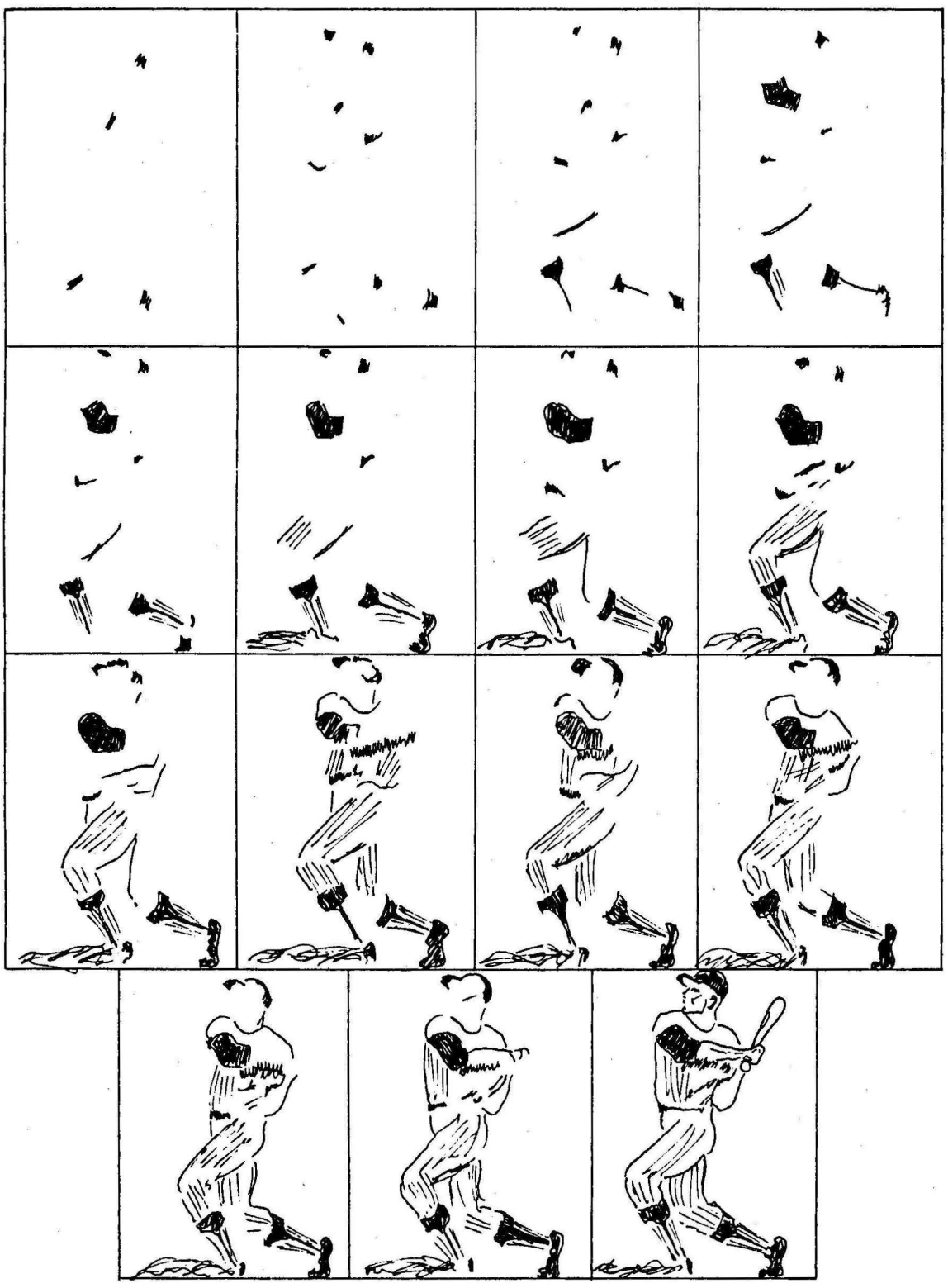
Series B



Series C



Series D



Series E

APPENDIX C

DECISION-LOCATION TEST

DECISION-LOCATION TEST

Before the first card of each series was shown, an appropriate list of possibilities was presented.

Series A (Activities)	Series B (Objects)	Series C (Animals)
1. Sitting*	1. Wristwatch*	1. Cat
2. Drinking	2. Jug	2. Dog
3. Standing	3. Alarm Clock	3. Fox*
4. Typing	4. Telephone	4. Mouse
5. Walking	5. Radio	5. Squirrel
6. Dancing	6. Stereo	6. Wolf

Series D (Letters)	Series E (Athletes)
1. F	1. Runner
2. E*	2. Batter*
3. T	3. Jumper
4. I	4. Catcher
5. G	5. Pitcher
6. C	6. Golfer

*The correct possibility, that is, the one represented on the final card in the series.