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A Construct Validity Study of the Adience-Abience Scale

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A CONSTRUCT VALIDITY STUDY OF THE
ADIENCE-ABIENCE SCALE

by

Loretta E. Lobbia

A Thesis Submitted to the Faculty of the Graduate School
of Loyola University of Chicago in Partial Fulfillment
of the Requirements for the Degree of
Master of Arts

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1982

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VITA

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CHAPTER I

INTRODUCTION

In 1960, Max L. Hutt introduced the Hutt Adaptation of the Bender Gestalt Test (HABGT) in an attempt to utilize the Bender as a projective device (Hutt & Briskin, 1960). Within this system, Hutt also presented two objective scales for scoring the Bender: the Psychopathology Scale and the Adience-Abience Scale. This study is designed to examine the validity of the Adience-Abience Scale (Hutt, 1977) as it relates to presumably normal adults.

Hutt has been both the main theorist and researcher regarding the concept of adience-abience. He regards adience-abience as a "primary defensive orientation whereby the person becomes aware of and attempts to cope with the continuing flood of ever-present visual-perceptual stimuli" (Hutt, 1980, p. 902). Adience and abience are the extremes on this continuum of a basic, stylistic mode of visual perception referring to the degree to which a person is relatively "open" (adient) or "closed" (abient) to visual stimulation and input.

Adience is thought to correlate with a relative receptiveness to new experience, with perceptual awareness of and perceptual approach toward the world. Thus adient

individuals are thought to actively seek out and explore their immediate environment, learning and adapting relatively quickly and effectively. At the other extreme, abience involves a non-responsiveness to visual stimuli stemming from "a failure of the organism to process the visual input, i.e., an awareness (more or less) that a visual stimulus is present" (Von Bekesy, cited in Hutt, 1977, p. 159). A highly abient person is thought to be far less likely than one highly adient to a) incorporate, integrate, and adapt constructively to new experiences, and b) to profit easily from learning experiences (Hutt, 1980).

The preliminary scale to measure adience-abience was revised in 1969 (Hutt, 1969a) and again in 1977 (Hutt, 1977). The reliability of the Adience-Abience Scale has been demonstrated (Hutt & Miller, 1975; Hutt & Dates, 1977), and studies have also been supportive of the validity of this scale. Hutt (1980), however, notes the need for further research on both the concept and measurement of adience-abience.

The relationship of the Adience-Abience Scale to other Bender scoring systems has not been studied. Visual perception relative to adient and abient styles has been studied (Credidio, 1975), but the role of visual perception of the Adience-Abience Scale as compared to on an alternate system for scoring the Bender has not.

A study by Blaha, Fawaz, and Wallbrown (1980) provides a methodological model whereby the information processing components, including visual perception, of Bender scoring systems can be assessed and contrasted. Those researchers studied children's errors on the Bender as scored by Koppitz (1963). The present study attempted to use the information processing analysis of Blaha et al. (1980) in relation to the Bender scores obtained by adults on the Adience-Abience Scale, with special attention to the visual perception component. This analysis was then compared to an identical one performed on an alternate scale for scoring the Bender, the Pascal and Suttell system.

In addition, the relationships of sex, intelligence, and reflection-impulsivity to adience-abience were explored.

CHAPTER II

Literature Review

Adience-Abience as a Perceptual Style

In 1960, Max L. Hutt introduced the Hutt Adaptation of the Bender Gestalt Test (HABGT) in an attempt to utilize the Bender Gestalt (BG) as a projective device (Hutt & Briskin, 1960). Within this system, Hutt presented two objective scales for scoring the BG, the Psychopathology Scale and Adience-Abience Scale. Hutt has since been both the main theorist and researcher regarding the concept of adience-abience. At the time of his first writing on the subject, Hutt conceived of abience as a withdrawal from the perceptual stimulus as a defense against what is idiosyncratically perceived as threatening, and of adience as a more "mature and active" type of defense (p. 28). Since these early writings, Hutt appears to have made no major changes in his conception of adience-abience, referring to it as a "primary defensive orientation whereby the person becomes aware of and attempts to cope with the continuing flood of ever-present visual-perceptual stimuli" (Hutt, 1980, p. 902). Adience and abience are the extremes on this continuum of a basic, stylistic mode of visual perception

referring to the degree to which a person is relatively "open" (adient) or "closed" (abient) to visual stimulation and input.

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Perceptual adience-abience is thought to develop during infancy and early childhood out of the interaction of the pace and tempo of the emotional experiences of those early years with the infant's inborn tendency to be responsive or nonresponsive (Hutt, 1976). The visual mode of relating to the world is an important one for the infant.

He searches for and responds to visual stimuli, and can also learn to have some control over visual input. That is, when stimulation is too intense or is traumatic, the infant can move his head to block his vision, redirect his gaze, or close his eyes. Thus, when the visual world is overwhelming, the infant learns to avoid it or withdraw from it; that is, to defend against it, to become perceptually abient and, therefore, perceptually avoidance-oriented.

As Hutt states:

In time, as these "threatening" events continue to offend him, he learns, according to our theoretical conception, to become perceptually abient or to "look without seeing." In other words, he tends to be unaware of much of the visual field which is before him (Hutt, 1976, p. 23).

On the other hand, if the field of stimulation is neither overwhelming nor traumatic, a responsive infant seeks out more of the visual stimuli around him and comes to be perceptually aware of and approach-oriented toward the visual field (i.e., adient), reacting selectively and adaptively to it.

Hutt states that, once established, a person's characteristic style tends to persist and resist change. He views adience-abience as a primary defense mode, serving as a foundation to the later development of other defensive and coping operations of the personality. It is assumed to differ from ego defenses such as repression

and projection in that adience-abience develops earlier and thus is more basic to ego functioning. It is also thought to differ from other perceptual defenses such as perceptual vigilance (Postman, 1953), selective attention (Sullivan, 1953), augmentation-reduction (Petrie, 1967), and repression-sensitization (Byrne, 1961) in that adience-abience involves the monitoring of the reception of visual stimuli, while the former involve the organism's "responding after the stimulus has been perceived and received; i.e., after it has been recorded" (Hutt, 1976, p. 23). Adience-abience is not expected to relate to behavioral approach-avoidance manifestations such as introversion-extroversion tendencies or overt aggressiveness. Hutt believes that adience-abience does significantly influence many aspects of learning and the capacity for both creativity and spontaneity.

In establishing the theoretical framework of adience-abience, Hutt has drawn predominantly from the work of T. C. Schnierla. On the basis of his study of motivation over a wide range of the phylogenetic scale, Schnierla (1959) has posited that "approach and withdrawal are the only empirical, objective terms applicable to all motivated behavior of all animals" (p. 2), concluding that

in all animals the species-typical pattern of behavior is based upon biphasic, functionally opposed mechanisms insuring approach or withdrawal reactions according to

whether stimuli of low or of high intensity, respectively, are in effect (p. 4).

This idea of biphasic processes motivating all animal behavior in conjunction with Hutt's clinical experience with and interpretation of the Bender Gestalt Test seems to have occasioned the development of the adience-abience concept.

Hutt (1969a) writes of

observations that certain kinds of distortions and size changes in the Gestalten as produced by the subject are correlated with some basic qualities of the personality, viz., a general tendency to resist the input of information from the external world, or the reverse, to seek out and utilize information from the external world (p. 25).

Specifically, Hutt (1980) noted characteristic differences between individuals regarding: 1) the size of reproductions, 2) changes in the angulation of the figures, 3) rotation of the figures, and 4) fragmentation of the figures (Hutt, 1980).

Based on these observations, a preliminary system for scoring the BG in order to measure adience-abience was developed.

On the basis of a pilot and cross validation study using a sample of deaf-retarded subjects, this initial scale was revised. A further revision of the Adience-Abience Scale was published in 1977 (Hutt, 1977, p. 159-

162). In both forms, the Adience-Abience Scale consists of four major factors relating to 1) space and size, 2) organization, 3) change in form of gestalt, 4) distortion. A total of 12 items is scored, each assigned a weight from +2 to -2. The final Adience-Abience score is the algebraic sum of the weights plus a correction factor of 25. Scores can range from 0 to 38, with high scores indicating an adient perceptual style and low scores reflecting an abient style.

The reliability of the Adience-Abience Scale has been demonstrated in two studies by Hutt and his colleagues. Hutt and Miller (1975) found adequate test-retest reliability over a two-week interval ($r=.84$) and high interjudge reliability ($r=.912$) using the protocols of 40 process schizophrenics. In a more extensive study, Hutt and Dates (1977) explored the scale's reliability using the protocols of 120 male delinquents assigned to one of three treatment groups. Over a 40-week interval, test-retest reliability was high for each of the treatment groups ($r=.91, .92, .93$). The inter-rater reliabilities for pretest and posttest scores were also high (Kendall's coefficient of concordance $=.90, .89$, respectively).

In addition to reliability data, Hutt (1977) provides norms for adults and for children ages 10-16. Adult norms are as follows:

<u>Group</u>	<u>N</u>	<u>Mean</u>	<u>SD</u>
Normals	140	25.8	3.5
Outpatient neurotics	125	23.8	3.6
Inpatient neurotics	55	21.0	3.8
Chronic schizophrenics	155	18.3	5.1
Organic brain damage	98	15.1	6.2

He reports that differences between each successive pair of means is significant at the .001 level or better, and notes the steady decrease in mean adience-abience scores and increase in standard deviation as one proceeds down the table from "normals" to "brain damage." This indicates that there is a trend for adience to decrease as psychopathology increases, although the variability of scores increases as psychopathology increases.

Hutt (1977) briefly describes each group. Of the normal population, 80 were screened for evidence of disturbance and 60 were "unselected" college students. Outpatient neurotics came from the psychotherapy practices of Hutt and other clinical psychologists. Inpatient neurotics included those hospitalized predominantly for severe anxiety or depression. The chronic schizophrenics were drawn from state mental hospitals, and "probably represent a larger proportion of indigent psychotics than may be found in psychiatric hospitals in general" (p. 154). Inclusion in the organic brain damage group

was based on clinically verified examination and represents cases with chronic disease processes or traumatic brain injury.

The norms for children are, according to Hutt (1977), based on a more restricted sample than the adults norms and are thus presented as tentative norms. These are as follows:

<u>Group</u>	<u>CA Range</u>	<u>N</u>	<u>Mean</u>	<u>SD</u>
Normals	10-12	102	21.3	3.9
Disturbed	10-12	109	18.2	4.1
Boys' Club	10-16	120	17.7	2.6

Again the pattern is as predicted by Hutt. The difference between the mean score of the normal and each of the other two groups is significant ($p < .001$). The difference between the "disturbed" and "Boys' Club" groups ($p < .05$) is interpreted as insignificant by Hutt (1977). That is consistent with the fact that the latter was comprised of 10-13 year olds, the majority of whom had been referred to the Club for person and property-related delinquent acts. On this basis, it could be expected that these boys would differ significantly in adience-abience from normal but not necessarily from disturbed boys.

Hutt makes several suggestions concerning the applications of his Adience-Abience Scale and its norms. One is for the screening and selection of candidates most

likely to be ready for some kind of therapeutic or ameliorative treatment. Individuals with fairly high degrees of psychopathology and an adient visual-perceptual style are believed to have a more favorable prognosis, in that the adient tendencies indicate a perceptual openness to and a capacity to profit from such a treatment experience. Hutt (1978) suggests this particularly within delinquent populations. He also views this scale as useful in the prediction of repeat offenses in a population of untreated delinquents and for differentiation of "'high' and 'low' risk youth" (Hutt, Dates, & Reid, 1977, p. 495). Since adience is thought to relate to inner resources and creativity, Hutt (1980) also suggests the use of his scale as a compliment to conventional measures of intelligence.

On the basis of his theory that the more adient person will be able to profit from a large variety of "learning" or "therapeutic" experiences, he suggests that a score above 21 on the Adience-Abience Scale indicates that "chances are good that significant improvement may be expected" (p. 164). He also notes that the meaning of scores for children under the age of 10 is not known at present, and calls for caution in generalizing from current norms to younger groups.

Hutt (1980) suggests early detection and treatment of abience based on his view that since it is largely a learned or experienced phenomenon, it can be unlearned. He admits that current knowledge of modification techniques with respect to this style of perception is very limited.

Validity of the Adience-Abience Concept

Since the development of this concept, research has focused on understanding adience-abience and further defining the utility of this concept as defined by Hutt. Hutt's ideas have been tested through a variety of studies examining the relationship of adience-abience to other personality variables, perceptual style, psychopathology and deviant behavior, and responses to therapeutic interventions. This research is examined in detail in the remainder of this section.

Adience-Abience and Perceptual Style. As conceptualized by Hutt, adience-abience refers to a basic style of visual perception. To test the validity of this, several studies have explored the relationship between adience-abience and other indices of perceptual style.

One aspect of perceptual style that has received some attention in this regard is field dependence-independence. As defined by Witkin, the field independent person is one who exhibits a generalized "analytic field approach,"

while the field dependent person evidences a "global field approach." He defines these further: The analytic approach represents a style of perceptual and intellectual functioning involving

the ready ability to overcome an embedding context and to experience items as discrete from the field in which they are contained....[while the] 'global field approach'...involves submission to the dominant organization of the field and the tendency to experience items as 'fused' with their background (Witkin, Dyk, Faterston, Goodenough, & Karp, 1962, p. 80).

On the basis of his conception that both an adient and an analytic approach involve perceptual accentuation of the focal object, Hutt expected a positive relationship between perceptual adience and perceptual field independence (Hutt, 1977; Hutt, personal communication, cited in McConville, 1970). However, though such a relationship might be expected, Hutt (1977) also emphasized that differences between adience-abience and other aspects of perceptual defense were expected. These arise from Hutt's conception of abience as a blocking out of the perception of the visual field, while other defensive perceptual operations are viewed by Hutt as a "perceptual response after the stimulus has been perceived" (Hutt, 1977, p. 158). Kachorek (1969) reasoned that persons accepting new stimuli in an adient or approach manner would also be "more active in the analyses of the new stimuli, that is, react field independently," while those who responded to new stimuli in an

abient or rejecting manner would tend "to be more passive in the presence of such stimulation, that is, react field dependently" (p. 11).

To test these hypotheses, Kachorek (1969) used Jackson's (1956) shortened form of Witkin's Embedded Figures Test and found no significant relationship between field dependence-independence and adience-abience among either male or female adult subjects. Pearson correlations between adience-abience and field independence-dependence scores were then calculated for the high adient ($n=15$) and high abient ($n=16$) subjects. Although not reaching the criterion for statistical significance, both the high adient and high abient groups of subjects scored field-dependently on the Embedded Figures Test ($.10 > p > .05$).

Thus, the relationship between field dependence and adience-abience is not clear in terms of what relationship might be expected to exist on the basis of theoretical formulations and in terms of empirical results to date.

McConnville (1970) also studied the relationship between adience-abience and field dependence-independence. Using different measures of field dependence, the Rod and Frame Test and the Hidden Figures Test, McConnville did not find a statistically significant relationship between

adience-abience and field dependence-independence in the total sample ($N=41$) of female college students, although the trends were in the predicted direction. However, when the scores of the high adient ($n=6$) and high abient ($n=6$) women were compared, significant differences were found on both measures of field dependence-independence as predicted. Thus, Hutt's predictions were confirmed in the analysis of the data of the extreme groups on adience-abience. The failure of Kachorek's results in supporting Hutt's formulation is not clear.

In summary, the relationship between adience-abience and field dependence-independence is not clear. Theoretically, Hutt proposes a relationship between adience and a field independent style and between abience and a field dependent style, yet he is careful to maintain that adience-abience and field dependent-independent styles are necessarily different in that the former regards the very perception of the stimulus while the latter involves the "adaptation of the organism after the stimulus (or stimulus-situation) has been perceived" (Hutt, 1976, p. 24). Empirically, the findings are inconclusive. There is a strong suggestion in the data, however, that adience-

abience and field dependence-independence may be related at the extreme ends of the adience-abience continuum with adience related to field independence and abience to field dependence. Further research on broader samples of the population needs to be conducted toward clarifying the relationship of these perceptual styles.

A well-controlled study demonstrating the relationship between adience-abience and perceptual style was conducted by Credidio (1975). This study attempted to directly test the hypotheses that the degree of acceptance of or resistance to the input of visual information (i.e., adience-abience) affects a person's ability to internalize and learn from experience. The methodology consisted of a time-controlled tachistoscopic presentation of familiar and novel stimuli in a complex visual field, followed by testing for immediate perception and long-term recall. Adience-abience was measured by the 1st Revision of the Adience-Abience Scale (Hutt, 1969). High adient subjects were found to perceive significantly more stimuli immediately and were better able to recall what they had perceived one week later.

These findings support the notion that high adient and high abient subjects perceive visual stimuli differently. A further question that remains, however, is whether

this difference in perception is specifically detected by the Adience-Abience Scale. That is, might not individuals falling at the extremes of an alternate scoring system of the Bender differ in their performance on other measures of visual perception in the same manner that high adient and high abient subjects differed? Given adience-abience theory as we know it, it would be hypothesized that such a similarity would not be found, that the Adience-Abience Scale does in fact measure an aspect of a person's perceptual functioning that other scales do not measure, for if it offers no new information it is not useful as a psychological scoring technique.

Adience-Abience and Approach-Avoidance Behavior.

Hutt stresses the fact that adience-abience refers to perceptual approach-avoidance and, as such, is not necessarily related to manifest approach-avoidance behavior. Two researchers have explored the relationship between adience-abience and specific behavioral equivalents of approach-avoidance.

McConnville (1970) studied the relationship of perceptual adience-abience to the area of social behavior. He chose the constructs of conformity and acquiescence as being social behaviors most clearly reflecting approach

and withdrawal. Jackson (1970) defined conformity as susceptibility to social influence and the concomitant tendency to modify behavior in order to be consistent with standards set by others. This concept of conformity was used to represent a form of approach toward, and receptivity to, interpersonal stimulation. Nonconformity, or withdrawal from interpersonal stimulation, was hypothesized to correlate with abience, and conformity with adience. Using Couch and Kenniston's (1960) definition of acquiescence and non-acquiescence as representative of a major dimension of "stimulus acceptance" versus "stimulus rejection," McConville predicted correlations between adience and acquiescence, abience and non-acquiescence. Acquiescence and conformity were measured by the Jackson Personality Inventory. Low, nonsignificant correlations were obtained in each instance.

Using the Eysenck Personality Inventory to measure overt introversion-extroversion tendencies, Credidio (1975) found no significant differences between the high adient and high abient subjects on this behavioral dimension.

The results of these studies are congruent with Hutt's formulation (1969a) that adience-abience is not related to overt manifestations of approach-avoidance behavior.

Adience-Abience and Age, Sex, and Intelligence.

According to Hutt's theory (1976) adience-abience develops very early in life and is thereafter resistant to change. Although only investigated in two studies, adience-abience was not found to be related to age in either research (Credidio, 1975; Hutt & Feuerfile, cited in Hutt, 1977), thus supporting the theory.

Although Hutt's theory does not mention sex as an influential factor in the development of adience-abience, several studies have examined possible sex differences in adient-abient perceptual styles. In the cross validation of their pilot study, Hutt and Feuerfile (cited in Hutt, 1969a) found differences in adience-abience scores between males and females in the deaf-retarded population, but the direction and significance of the difference is not reported. Hutt notes that it was the impression of the clinical staff that the male population was far less impaired intellectually than the female population in general. Perhaps this sex difference on intelligence influenced the sex difference in adience-abience, since no other studies report sex difference in adience-abience.

In subsequent studies on hospitalized schizophrenics (Hutt & Miller, 1975, 1976), and on an adult population drawn from the academic community including undergraduates, graduate students, and employees (Karchorek, 1969), no sex differences in adience-abience were found.

In summarizing the research findings, sex has not been an important variable except in an extreme population, that of the deaf-retarded subjects. This finding may have been an artifact of that particular sample. However, given the limited number of studies in which this variable was controlled, further research on the relationship of adience-abience to sex seems warranted.

Research on the relationship of adience-abience to intelligence found inconsistent results. With Feuerfile (cited in Hutt, 1969a), Hutt used Goodenough IQ scores and ratings of intellectual impairment (not described by the authors) as measures of intelligence and found them significantly related in the preliminary analysis ($p < .01$), with higher intelligence (less impairment) related to adience. The cross validation analysis replicated these results ($p = < .01$), except for the ratings of impairment for males ($p = > .25$). Other empirical evidence of a relationship between adience-abience and intelligence is found in a study

of 120 delinquent teenage males (Hutt, Dates, & Reid, 1977). In this population, educational achievement, as an index of intelligence, was positively correlated with adience-abience ($r=+.1985$, $p < .05$).

Other studies have failed to find such a relationship. Hutt (1969a) found no differences in WAIS IQ scores between two sets of matched groups of high adient and high abient adult male hospitalized schizophrenics. Hutt and Miller (1976) failed to find a relationship between level of educational attainment (grade level) and adience-abience among 40 hospitalized adult and 100 outpatient psychotherapy subjects. In both studies, these results are not discussed relative to the 1969 hypothesis. Using the Quick Word Test as a measure of intelligence, Credidio (1975) failed to find a relationship between this measure of intelligence and adience-abience in a sample of 40 adult outpatient psychotherapy clients.

The use of different measures of intelligence, different populations, and different forms of the Adience-Abience Scale make it difficult to summarize and understand the empirical data regarding the relationship of adience-abience to intelligence. However, it seems that no relationship between these variables has been found in adult

samples (over 18 years of age) of hospitalized schizophrenics or outpatient psychotherapy clients. Positive relationships were found in deaf-retarded and male delinquent populations.

Further confusing the issue is that fact that Hutt appears to have abruptly changed his position on the theoretically expected relationship between these two variables. Until recently, Hutt predicted a positive relationship between intelligence and adience-abience, reasoning that the receptiveness and openness of the perceptual style of adient subjects renders them more able to learn from and integrate experience. Then, in 1980, Hutt wrote: "In all the studies that have been reported, it has been found that, above the age level of 10 years, age, sex, and intelligence are not significantly related to scores on the Adience-Abience Scale" (p. 907). Such a blanket statement does not fit the results just cited and does not help to promote an understanding of the concept of adience-abience. Additionally, the evidence occasioning this revision in theory is not outlined in Hutt's writings. It seems that further investigation in this area is necessary.

Adience-Abience and Psychological Adjustment. As Hutt (1977) defines perceptual adience, an adient individual would be characterized generally as actively seeking out and exploring the immediate environment, learning and

adapting more quickly and effectively than one who is less adient. He predicts that adience-abience will be related to psychopathology:

Although position on the adience-abience dimension is not perfectly related to degree of psychopathology (since the two scales measure somewhat different personality operations), those who show severe degrees of psychopathology are presumed to have fairly high degrees of perceptual abience..., whereas those who show little psychopathology are presumed to have fairly high degrees of adience (Hutt, 1980, p. 902).

Beyond a relationship to psychopathology itself, Hutt predicts that "if my theory is correct, those who are perceptually adient should be healthier psychologically, more easily able to adapt and to profit from new experiences, and generally more able to learn more effectively" (p. 349). That is to say, the more adient person, in general, possesses a greater capacity "to marshal inner resources in making adaptive adjustments" (Hutt, 1969b, p. 509), the indications of this adjustment made manifest in various behaviors. Thus, there are two major issues to study with regard to the relationship between adience-abience and psychological adjustment:

- 1) What is the relationship of adience-abience to psychopathology? Included here is the question of whether the Adience-Abience Scale can differentiate between various groups over the range of psychopathology; and
- 2) What is the relationship of adience-abience to the

capacity for adaptive adjustment?

Many studies have examined these relationships in a variety of populations.

Hutt and Feurerfile (cited in Hutt, 1969) conducted a preliminary analysis and a cross validation analysis of the initial Adience-Abience Scale in 1963, using a population of 200 hospitalized deaf-retarded subjects ranging in age from 11 to 43 years (mean age=23). In the preliminary study, 15 cases relatively high in adience and 15 high in abience were randomly selected and compared to test the hypotheses that adient subjects, in contrast to abient subjects, would show: 1) less severe psychopathology as measured by the Psychopathology Scale of the HABGT and by clinicians' evaluations; 2) higher intellectual functioning as measured by Goodenough drawings; 3) less intellectual impairment as per clinicians' ratings; 4) later age of admission to the hospital; and 5) a shorter length of hospitalization. The differences were significant ($p < .02$) in the predicted direction for all but the length of hospitalization variable, which approached significance in the predicted direction. Thus high adient subjects performed better intellectually, evidenced less psychopathology, and were hospitalized at a later age than high abient subjects. Hutt views these results as suppor-

tive of a relationship between effective adjustment and adience.

In what Hutt calls the cross validation study, data from the remainder of the original population ($n=170$) were analyzed in relation to psychopathology, intelligence, intellectual impairment, age of admission, Weschler Performance Intelligence Quotient (PIQ), a rating of overt hostility, and a rating of aggression. However, this was not technically a cross validation study since subjects were drawn from the same population for this study and for the initial one. Due to noncontinuous variables or skewed distributions, analyses were conducted on subjects in the upper and lower 25% of the distribution on each criterion variable. All tests on the intellectual variables (Goodenough IQ, intellectual impairment for male subjects, and Weschler PIQ) were consistent with the results from the preliminary study, as were tests on psychopathology ratings and age of admission. The relationship between overt hostility and adience-
abience was significant for males but in the direction opposite of that expected: high hostile males scored in the adient direction relative to low hostile males. With the exception of this latter finding, the results of both the preliminary and the validation studies were supportive of a relationship between adience and effective adjustment.

The normative data discussed earlier (Hutt, 1977) also provide evidence of a relationship between adience-abience and different levels of psychopathology. For example, normals, outpatient neurotics, inpatient neurotics, chronic schizophrenics, and organics were all found to differ significantly in adience-abience. As predicted, the more disturbed groups scored in the more abient direction.

Several studies have regarded the relationship between adience-abience, adaptive adjustment, and/or psychopathology within schizophrenic or psychotic populations. Hutt and Miller (1976) found statistically significant correlations between Adience-Abience Scale and Psychopathology Scale scores in a population of male and female hospitalized schizophrenic adults ($p < .01$). As predicted, abience was related to more severe pathology.

In a study of hospitalized schizophrenics, Hutt (1969a) used length of hospitalization as an indicator of a person's capacity for adaptive adjustment. He predicted that the group hospitalized for only a short length of time (less than six months [$n=12$]) would be more adient, that is, more perceptually open and thus more likely to learn from experience, than those undergoing an extended hospitalization (more than five years [$n=20$]). Hutt's predictions were supported. However, many salient variables

such as intelligence, economic status, level of psychopathology, and support system outside the hospital were not controlled in this study.

Hutt (1969b) tested the measure of adience-abience in its predictive ability regarding "inner psychological adaptability," operationally defined as "creativity" of productions in the Elaboration Phase of the HABGT, number and variety of the content of associations on the Association Phase of the HABGT, and the amount of recall on the Recall Phase. The subjects were a group of hospitalized male psychotics ($N=80$) who were: 1) first admissions; 2) in the hospital at least one, but not more than 12, months; 3) between 20 and 30 years old; 4) free of clinical or neuropsychological evidence of organic brain pathology; and 5) either relatively high on perceptual adience or perceptual abience as measured by this scale. Two sets of comparisons were conducted on matched groups of 20 high adient and 20 high abient subjects. One group was compared on scores from the Elaboration and Association Phases, the other on the Recall Phase. There were no significant differences in age, Weschler Adult Intelligence Scale (WAIS) IQ scores, or psychopathology as measured by the HABGT between the subgroups of either of the two sets of subjects. Hypotheses that high adient subjects would perform more creatively and produce more numerous and varied associations than high abient sub-

jects, in evidence of greater inner resources, were supported at the .01 level. There was a tendency for the adient subjects to evidence greater recall, but the difference was not statistically significant ($.05 < p < .10$). Hutt views these results as supportive of the validity of the Adience-Abience Scale as well as of the adience-abience theory in that persons differing in this perceptual style differ also in their ability to "draw upon their own resources ('inner psychological adaptability')" (p. 510), that is, to internalize and learn from experience. The fact that psychopathology was unrelated to adience-abience, in contrast to earlier findings (Hutt and Feuerfile, cited in Hutt, 1969a) and theoretical formulations, is not addressed by Hutt. Thus, this study supports the hypothesized relationship between adience and adaptive adjustment, but not the hypothesized relationship between adience and psychopathology.

Research on adience-abience and psychopathology in a population of delinquents has also been conducted (Hutt & Dates, 1977; Hutt, Dates & Reid, 1977). Subjects were 120 white, lower middle class males ranging in age from 13 to 15 years, living in Oakland County, Michigan. They were selected at random from pools of subjects designated by two variables: 1) non-intact versus intact homes and 2) crimes against people versus crimes against property. Forty subjects were assigned to each of three treatment groups: group treatment, individual treatment, and no treatment

(control). Treatment conditions consisted of group or individual tutoring and counseling, depending on the condition to which subjects had been assigned. In addition to the HABGT, the Tennessee Self-Concept Scale, Wide Range of Achievement Test (WRAT), and Rogers Behavior Scale (to measure ongoing "life adjustment" behaviors) were administered as pretests prior to treatment and 40 weeks later. Recidivism was measured two years after termination from the program.

Using pretest data, Hutt, Dates, and Reid (1977) studied the predictive abilities of the Psychopathology and Adience-Abience Scales in terms of their ability to differentiate the delinquents from a normal population and to differentiate within this group between recidivists and non-recidivists. The relationship of the HABGT measures to other scales used as indices of delinquency was explored. The authors compared the adience-abience and psychopathology scores of their sample to the norms cited in Hutt (1977). The mean adience-abience score of the delinquents did not differ significantly from that of the disturbed group but was significantly lower (more abient) than that of the normal population ($p < .001$). The correlations between the Adience-Abience Scale and other measures used as indices of delinquency are low but significant. The delinquent group also scored significantly higher on psychopathology than

the reported norms for normal and disturbed children ($p < .001$). Adience-abience was significantly related to psychopathology ($\rho = -.6565$, $p < .001$), self-concept ($\rho = +.5496$, $p < .001$), anti-social behavior ($\rho = -.3230$, $p < .001$), and educational achievement ($\rho = +.1985$, $p < .05$). That is, adience subjects evidenced less psychopathology, higher self-concept, less anti-social behavior, and higher educational achievement than abient subjects, as expected by the authors.

Hutt and Dates (1977) report comparisons of the correlations of Adience-Abience and Psychopathology Scale scores obtained from the groups (group, individual, and no treatment) of delinquent males 40 weeks later. The relationship between adience-abience and psychopathology was still significant at the .001 level. However, the correlations between these scales decreased in both experimental groups, although still remaining significant at the .01 level. This was due to the fact that, although Psychopathology scores decreased over the 40 weeks, Adience-Abience scores remained relatively the same. That is, treatment had a differential effect on psychopathology and adience-abience; the former was modified; the latter was not. This is in keeping with Hutt's thinking that adience-abience is resistant to change (Hutt,

1976). These studies demonstrate the strong relationship between adience-abience and psychopathology as measured by the HABGT.

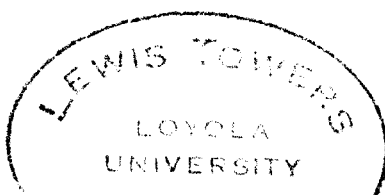
Regarding recidivism, Hutt et al. (1977) note that there was no variance in recidivism for either of the treatment groups. The actual data are not reported, and no interpretations of these results are discussed. Due to this lack of variance within treatment groups, the authors explain, Pearson correlations between the HABGT scales and recidivism were conducted using only the control group data. These correlations were: Adience-Abience and recidivism, $r = -.49$; Psychopathology and recidivism, $r = +.44$. Both correlations are in the expected direction, that is, as abience and psychopathology increase, so does recidivism. Both are significant at the .01 level. Furthermore, a multiple correlation analysis, with Adience-Abience and Psychopathology as predictors of the criterion variable of recidivism, yielded a multiple r of $+ .57$, significant at the .01 level.

These analyses indicate that the scales of the HABGT, either independently or as a single composite variable, have significant predictive ability for recidivism where no treatment has occurred. The size of the correlations, however, cautions against use of these scores for individual rather than group predictions. In addition,

it is important to stress that these results are for a "no treatment" group. The rationale for not analyzing, or at least not presenting, the experimental group data relative to recidivism is questioned.

In general, the adience-abience research in a delinquent population offered some support for the construct validity of the Adience-Abience Scale relative to the differentiation of a delinquent from a normal group, and also regarding the tendency for adient-abient perceptual styles to resist change and persist over time. The predictive ability of this scale for groups of delinquents receiving no treatment also received some support.

Research on psychopathology and adience-abience within samples of outpatient psychotherapy clients has also been conducted. Hutt (1969a) tested the hypothesis that adient subjects, due to their receptiveness, would demonstrate greater improvement from insight-oriented psychotherapy than abient subjects. Hutt had both HABGT protocols and ratings of degree of therapeutic change for 42 of his own psychotherapy clients, ranging in age from 18 to 35 years. The rating scale involved global judgments on symptomatic improvement, ego functioning, degree of maturity, and absence of psychopathological anxiety. The mean adience-abience scores for the high and low psychotherapeutic change groups were significantly different in the predicted direc-



tion ($p < .01$). However, the significance of this result is limited by the lack of controls for initial degree of psychopathology, motivation of change, intelligence, and age. The Adience-Abience Scale did discriminate between the two extreme groups, but the meaning of this is unclear given the confounds mentioned.

In studying the interrelationships of the Psychopathology and Adience-Abience Scales, Hutt and Miller (1976) found a statistically significant relationship between these measures in a sample of 100 adult male and female outpatient psychotherapy clients (males, $r = -.39$, $p < .01$; females, $r = -.42$, $p < .01$). Thus, adience-abience and psychopathology were related in a population that was presumably less disturbed than psychotic or hospitalized populations in general. As a part of this study, these authors also gathered data from a group of hospitalized schizophrenics ($n=40$). Although the correlations obtained for the outpatient group are significant, they are smaller than those of the hospitalized sample (males, $r = -.64$, $p < .01$; females, $r = -.77$, $p < .01$). This finding supports Hutt's view that adience-abience and psychopathology are more strongly related at the extreme end of the psychopathology continuum.

Credidio (1975) also sought to measure the relatedness of adience-abience and psychopathology in a population

of adults seeking outpatient psychotherapy. He administered the Eysenck Personality Inventory (EPI) in order to measure neuroticism-stability as an index of psychopathology. According to the theory, he expected abient subjects to score in a more neurotic direction, and adient subjects to score higher on stability. The results, however, did not support his predictions. No differences between adient and abient subjects were found on this variable. This might be accounted for by the fact that this study of the relationship between adience-abience and psychopathology is the only one in which a measure of psychopathology other than the HABGT was used.

Thus, research regarding the relationship between adience-abience and psychopathology with outpatient psychotherapy clients suggests that these variables are related when measured by the HABGT, and are not as strongly related as they are within more severely disturbed populations. However, perhaps such a clear and simple summary statement is misleading. Three important issues deserve attention.

First, the fact that Credidio (1975) failed to find evidence in support of the hypothesized relationship between adience-abience and psychopathology when an independent measure of psychopathology was used raises an important consideration. These two scales are not totally independent measures of their respective variables in that

both are scored from BG protocols and have some factors in common, although these are differentially weighted in each scale. Both Hutt and Dates (1977) and Hutt and Miller (1976) have demonstrated that these scales are related to each other. Furthermore, a comparison of the tables of norms for each of these scales reveals the relatedness of these measures. It is unclear whether there is truly a relationship between adience-abience and psychopathology, or whether the research findings demonstrating this are attributable to the non-independence of the scales by which these variables are measured. Credidio's failure to find a relationship between adience-abience and an independent measure of psychopathology at least suggests the possibility that the results of the research regarding adience-abience and psychopathology in the deaf-retarded, psychotic, delinquent, and outpatient populations might not be replicated if independent measures of psychopathology were employed.

Second, Hutt believes, and research demonstrates, that adience-abience and psychopathology are more strongly related at the extreme degrees of psychopathology due to the decreased inner psychological adaptability related to severe psychopathological states. Yet such a finding is not surprising. Chapman and Chapman (1973) write: "Very disturbed schizophrenics do badly on all tasks, and

less disturbed subjects do much better" (p. 64); and "Normal subjects perform much better than schizophrenics on most tasks" (p. 80). Thus it seems that one cannot place too much emphasis on the finding, at this stage of our understanding.

Third, the results of two studies do not support Hutt's theory, yet no attempt is made in more recent writings to address, understand, or integrate these findings. The restating of a recent quote from Hutt demonstrates the failure to take such findings into consideration:

Although position on the adience-abience dimension is not perfectly related to degrees of psychopathology those who show fairly high degrees of psychopathology are presumed to have fairly high degrees of perceptual abience (and empirical evidence corroborates this), whereas those who show little psychopathology are presumed to have fairly high degrees of adience (and empirical evidence corroborates this, too) (1980, p. 902).

This blanket statement is only partially true. As Credidio writes: "The validity of such rationale must be questioned as research which does not attempt to integrate previous work on the adience-abience construct will not help to promote it" (p. 68). Thus, there is still much to understand regarding the nature of the relationship between adience-abience and psychopathology.

In sum, the research indicates that adience-abience was related to degree of psychopathology and the capacity for making adaptive adjustments in a deaf-retarded, psycho-

tic, male delinquent, and, when the HABGT is used to measure psychopathology, in outpatient psychotherapy client populations. Adience-Abience scores successfully differentiated between groups varying in degree of psychopathology from "normal" to "organic brain damaged." The adaptive adjustments measured included length of hospitalization, "creativity," and psychotherapy outcome. Adience-abience was significantly related to self-concept, amount of anti-social behavior, educational achievement, and recidivism in delinquent males.

Summary. Research generally has supported the validity of the Adience-Abience Scale and construct. Adience-abience was demonstrated to relate to:

- 1) the amount of visual stimuli immediately perceived and, in turn, the amount of long-term recall regarding the stimuli;
- 2) degree of psychopathology, especially at the extremely disturbed end of the psychopathology continuum;
- 3) adaptive adjustments, such as creativity, psychotherapy outcome, and recidivism and length of hospitalization (negative correlations).

Adience-abience was not demonstrated to relate to:

- 1) age or sex;
- 2) approach-avoidance behavior such as conformity-nonconformity or introversion-extroversion; or

3) psychopathology in outpatient clients as measured by the neuroticism-stability scale of the EPI.

Studies of the relationships between adience-abience and field dependence-independence and intelligence offer inconclusive findings.

Although it might seem that evidence for the validity of the adience-abience construct is strong, there are several points to keep in mind regarding this research. First, nearly all the published research has been conducted by, or in conjunction with, Hutt. Second, most of the research has been conducted on extreme populations such as deaf-retarded subjects and hospitalized schizophrenics. Third, many such studies have not adequately controlled for possible confounding variables. For example, level of psychopathology, intelligence, or motivation for change were not controlled in the study relating psychotherapy outcome to adience-abience (Hutt, 1969a). Thus, the generalizability of the results of many studies in this area must be viewed critically. Fourth, a clear understanding of the status of adience-abience research is further complicated by the fact that Hutt draws conclusions from the data that serve to build up his theoretical position without necessarily clearly stating what elements of the data are providing supporting evidence.

Therefore, although validity studies have been generally supportive of the scale, the aforementioned practical, methodological, and theoretical problems call into question the power and generalizability of the conclusions of these studies. Hutt (1980) cites the need for further research on both the concept and measurement of adience-abience. Careful study in independent laboratories is warranted, giving special attention to methodology and design of the research.

Research assessing other Bender scoring systems should be useful in providing methodological models or frameworks for designing well-controlled investigations of the Adience-Abience Scale. For example, an information processing model used by Blaha, Fawaz, and Wallbrown (1980) to evaluate components of Bender performance seems to have potential relevance for understanding the relationship between adience-abience and perceptual-motor functioning, especially visual-perceptual functioning. This model and the research of Blaha et al. (1980) will be discussed in detail in the next section.

An Information Processing Model for Understanding Perceptual Style

Blaha et al. (1980) studied the information processing components of the variance of children's Koppitz

scores on the BG. Their analysis was based on the four-stage model of information processing discussed by Neisser (1967) and Smith (1968). This model will be described.

In the first, preprocessing, stage, a representation of the raw stimulus is formed. The second, central processing, stage consists of comparing this representation to memory and categorizing it. The third stage involves the selection of the appropriate response. In the fourth stage, response execution, the response is produced. Obviously only the presentation of the stimulus and the stage of response execution are directly observable. Blaha et al. write: "While the first three stages are inferred, a stage may be isolated conceptually and experimentally by varying the task requirements that load that single stage while task aspects that load other stages are kept constant" (p. 784). They applied such an analysis to the BG performance of children, conceptually determining the relative loading of each of the four stages.

Believing intelligence to be a higher order variable affecting the whole information processing system, the authors partialled it out of the correlations between the tasks chosen to load on each stage. The Matching Familiar Figures (MFF) test (Kagan, Rosman, Day, Albert, & Phillips, 1964) is a visual discrimination task and thus heavily loads the preprocessing and central processing

stages, which constitute the initial visual perception of the stimulus. From the correlation between the MFF error score and Bender performance as measured by Koppitz errors, the amount of the variance accounted for by the preprocessing and central processing stages, i.e., by the visual perception demands of Bender performance, was determined. The MFF latency score, that is, the average time elapsing before a subject made a first response to each MFF plate, correlated with Koppitz scores yielded a measure of conceptual tempo (i.e., of the decision process between the central processing and response selection stages). The Draw-a-Person (DAP) scaled score was used to load on response selection and response execution stages. The fact that DAP scaled scores were not correlated with MFF errors supported the assumption that these tasks differentially load separate subprocesses of human information processing. The authors found that intelligence accounted for 9% ($p < .05$) of Bender variance and, with intelligence partialled out, found that: 1) 16% ($p < .05$) of Bender variance was accounted for by visual perception (i.e., MFF errors); 2) 3% of Bender variance was accounted for by conceptual tempo (i.e., MFF latency; and 3) 6% ($p < .05$) of Bender variance was accounted for by visual-motor integration/motor coordination (i.e., DAP scaled score) (see Figure 1).

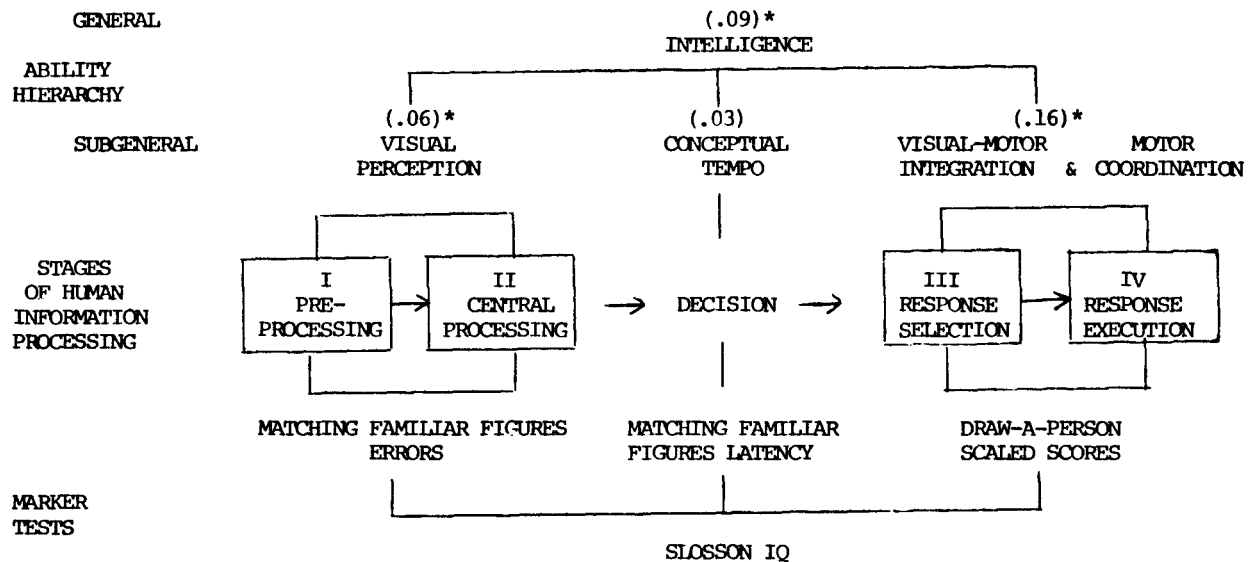


Figure 1. The results of the analysis of the Koppitz score variance accounted for by marker tests used to assess its information processing components. (Numbers in parentheses above each component in the ability hierarchy indicate the proportion of Koppitz variance accounted for by that component. Components at the subgeneral level of the ability hierarchy have Slosson IQ partialled out of the correlations with the Koppitz scores.)

* $p < .05$.

This study provides a methodology by which to assess the extent of the visual perception component in adience-abience scores relative to the other components of conceptual tempo and visual-motor integration/motor coordination, as well as to compare the relative weights of Adience-Abience Score components to those of an alternate Bender scoring system, such as the Pascal Suttell (P/S) (1951) system for scoring the Bender protocols of adults. These areas of research might help delineate what the Adience-Abience Scale measures relative to another Bender scoring system, as well as the role of visual perception in these systems.

Reflection-Impulsivity.

Reflection-impulsivity, as measured by the MFF, is conceptualized of as an individual variable describing the cognitive processes involved in "reflecting on the accuracy of available hypotheses" (Kagan & Messer, 1975, p. 224) in the solution of problems containing response uncertainty. This variable has been operationally defined on the MFF in terms of two dimensions: latency to first response and accuracy of choice. In the MFF, a series of 12 plates containing pictures of a familiar item (the standard) and eight pictures that look much like the standard (the variants) are presented to the subject one at a time. The subject must choose the variant that is exactly like the standard. The time elapsing before the subject's

first response is recorded. The subject must continue to choose among the variants until correct or until eight responses have been made. Thus, mean latency and total number of errors are the dependent measures used. Since there exists no normative data for adults, those whose scores fall below the sample median for errors and above the sample median for latency (slow/accurate [S/A]) are referred to as "reflective" while those whose scores fall above the sample median for errors and below the sample median for latency (fast/inaccurate [F/I]) are referred to as "impulsive." Subjects falling in the other two cells are referred to as "fast/accurate" (F/A) or "slow/inaccurate" (S/I) (Salkind, Note 1).

Most research on the reflection-impulsivity dimension has been conducted on populations of children. The generalizability of such results to adult populations is questionable. One study using adult subjects was conducted by Drake (1970) on a small sample ($N=16$) of male and female undergraduate students. In order to study the perceptual correlates of impulsive and reflective behaviors, Drake studied the eye fixations of reflective and impulsive subjects while regarding two types of items: match-to-standard items as modified from the MFF, and pair items extracted from parallel forms of the MFF, of which half the pairs were, in fact, the same and half were different. Eye fixa-

tion was assumed to reflect the subject's cognitive approach to the task. Subjects were classified as impulsive or reflective independently for MFF and for pair items on the basis of whether their response time (RT) was below or above the median RT for the sample.

Differing patterns of eye fixations between reflective and impulsive subjects were found. Reflectives used an approach that required gathering more information about the visual stimuli, and doing so more carefully, than that of impulsives. The following differences were found within the first six seconds of performance on MFF items: impulsive subjects allocated 32% of their fixations to the standard stimulus while reflective subjects allocated 25% of their visual regard to the standard. Though not reaching statistical significance, there was a tendency for impulsive subjects to regard a larger proportion of the area of the standard than of the variants, while reflective subjects approached regarding an equal proportion of the area of both. By the time they had made a response, reflective subjects had both regarded a larger portion of the area of the visual stimuli and had done so more thoroughly than impulsive subjects. They also made about twice as many comparisons as impulsive subjects between homologous parts of different figures, had looked at a larger area of the standard and of the variants fixated, and had a higher

number of fixations per figure fixated. Only the reflective subjects always regarded all four variants before responding. Impulsive subjects were more willing to make a response before a lot of "data" had been collected, and were less concerned about reviewing the data that formed the basis for their decisions. Reflective subjects were not willing to answer until they had found evidence that all the variants but the one they would choose were indeed different from the standard.

Kagan et al. (1964) link a reflective style to an analytic one; that is, the production of an analytic rather than a relational, global categorization depends on a) a tendency to inhibit impulsive answers and b) a tendency to analyze a stimulus into the elemental components. The research of Drake appears to demonstrate the employment of such a strategy by reflective subjects. This is a different style of visual analysis than impulsive subjects used.

Given that the MFF requires careful visual analysis of the stimuli, and that adience-abience refers to an aspect of visual perceptual style, some relationship between reflection-impulsivity and adience-abience may be postulated. If abient subjects literally do not perceive all the elements of the visual stimulus, correct responding on the MFF, given the fine visual discriminations required, would probably be more difficult for them. Thus, abient

subjects would be expected to make more erroneous choices on the MFF than adient subjects.

Predicting a relationship between adience-abience and mean latency is more difficult. Anxiety over error has been cited as one antecedent of a reflective style in children (Messer, 1970). An abient person may have been experiencing difficulties due to the failure to process visual input and may have become sensitized to failure (error) in tasks requiring this ability. They may have adopted a strategy to cope with this deficiency. Abient individuals may avoid answering for fear of making a mistake. On the other hand, they might want to "get it over with." Knowing that errors are inevitable, they may respond in a very short time. An adient subject may be visually facile and respond quickly based on previous success in visual pursuits. Or an adient person may want to be certain of accuracy and thus take more time before responding. Thus, the study of the relationship of adience-abience to error score latency, and to latency x errors (reflection [S/A], impulsivity [F/I], and the S/I, F/A categories) of MFF performance is warranted.

Statement of Problem and Hypotheses

In light of the need for further empirical evidence of the validity of the Adience-Abience Scale, particularly in relation to the visual perception measurement, and also

regarding the relationship of adience-abience to subject and personality-perceptual variables, the following hypotheses will be tested:

1) Controlling for intelligence, visual perception (MFF error) will account for significantly more of the variance of Adience-Abience scores than either conceptual tempo (MFF latency) or visual-motor integration/motor coordination (DAP).

2) Visual perception (MFF error) will account for significantly more of the variance of Adience-Abience scores (holding intelligence and Pascal score constant) than Pascal scores (holding intelligence and Adience-Abience scores constant).

3. In contrast to Hutt's position, high adient subjects will score significantly higher on intelligence (ACT scores) than high abient subjects.

4) There will be no differences in the Adience-Abience scores of males and females.

5) High abient subjects will make significantly more errors on the MFF than high adient subjects.

In addition, the relationships of MFF latency and reflection-impulsivity to adience-abience will be explored.

CHAPTER III

METHODS

Subjects

Subjects for this experiment were 61 undergraduate students who chose to participate as an option of their Psychology 101 course. Five subjects had to be dropped from the study (three female, two male): one subject refused to allow her ACT/SAT scores to be obtained, and such scores were not available for the other four subjects (two male, two female). The results of this study are based on the data of 56 subjects, 28 males and 28 females.

Materials

Bender Gestalt Test. The test materials for each subject consisted of a stack of 8 1/2" x 11" white unlined paper, three sharpened No. 2 pencils, and the standard Bender Gestalt cards.

Materials required for scoring adience-abience included: the 2nd Revision of the Adience-Abience Scale (Hutt, 1977, pp. 159-162), one scoring sheet per subject, templates for scoring height and angulation deviations, and a protractor for measuring rotation deviations.

The Adience-Abience Scale consists of four major factors relating to 1) space and size, 2) organization, 3)

change in form of gestalt, and 4) distortion. A total of 12 items is scored, each assigned a weight from +2 to -2. The final Adience-Abience score is the algebraic sum of the weights plus a correction factor of 25. Scores can range from 0 to 38, with high scores indicating an adient perceptual style and low scores reflecting an abient style.

The standard Bender cards used in this study differ slightly from those used in the HABGT. In the latter, the stimulus designs are generally smaller and in Figures 2, 5, and 6 the number of elements has been reduced. Templates for scoring deviations in size and angulation were constructed applying Hutt's criterion to the size and angulation of the standard Bender stimulus designs. A deviation in size was scorable when the reproduction was increased or decreased by one-fourth the size of either the horizontal or vertical dimension of the corresponding stimulus figure (Hutt, 1977, p. 100). Deviations in angulation were scored if they differed by 15 degrees or more from that of the stimulus figure (p. 108).

The Pascal and Suttell manual (1951, pp. 110-217), a protractor, and one scoring sheet per subject were required for scoring according to this system. The raw score, consisting of the algebraic sum of the weighted values for 105 factors, was converted to a Z score based on norms for subjects ages 15-50 with one year or more of college (p. 101).

The Pascal and Suttell scoring technique was standardized for adult subjects and is appropriate for this population (Koppitz, 1975, p. 11). This scoring system is used most widely in psychiatric populations (Koppitz, 1975, p. 10).

Tolor and Schulberg (1963, pp. 192-194) cite the following findings of studies regarding the reliability of this scoring system. Test-retest reliability coefficients tend to be higher for non-patient than patient samples, higher for low scoring normals than high scoring normals (Pascal, 1950), and of course, higher over shorter time intervals (Addington, 1952; Pascal, 1950; Pascal & Suttell, 1951). These coefficients range from .63 to .76 in the various studies. Inter-rater reliabilities ranged from .90 to .96 (Nadler, 1957; Olin & Reznikoff, 1957; Pascal, 1950; Pascal & Suttell, 1951; Story, 1960). Regarding odd-even reliability, Tolor and Schulberg (1963) cite studies by Pascal (1950) and Pascal and Suttell (1951) in which a reliability coefficient of .51 was obtained. This low correlation was thought to be due to the differing reactions of subjects to the specific figures as has apparently been demonstrated in the research.

Tolor and Schulberg (1963) conclude that the scoring system is of reasonably high consistency over time, that inter-rater reliability is very high, and that internal

consistency is hard to demonstrate given the nature of the designs. Overall, the reliability of this technique appears to be adequate.

These authors also note that "the issues of the validity and value of Pascal and Suttell's system continue to be in dispute" (p. 94). However, given that the reliability is high, the validity issue does not contraindicate the use of Pascal and Suttell's scoring system in this study, with a normal population, as a measure of visual-motor integrity.

Matching Familiar Figures. Test materials for each subject included a bound MFF booklet containing the two practice and 12 MFF items for adult subjects, a stop watch, and a recording sheet.

In this test the subject is to look at both a standard stimulus and eight variations of the standard, of which only one duplicates the standard. The subject's task is to choose the duplicate. He/she must continue to choose until making the correct choice or having made eight errors, in which case the experimenter tells the correct response. The time elapsing before making the first response (latency) and all responses on each item are recorded by the experimenter. Two scores are obtained for each subject: the average latency over the 12 trials and the total number of errors made.

Messer (1976) reports reliability data for the MFF. Equivalent form reliability coefficients based on the data of 30 children ranged from .92 to .98. Test-retest coefficients over an eight week interval ranged from .58 to .96 for latency scores and .34 to .80 for error scores. He notes that "because of sampling and procedural irregularities and the use of the same version (versus equivalent versions) of the MFFT, these studies may not accurately represent the true MFFT test-retest reliability" (p. 1029).

Internal consistency reliability coefficients reported by Messer include .58 and .62 for error scores and .89 for latency scores in children. One would expect higher reliability in adults.

Convergent validity of the MFF with tests similar to it (including 10 forms of a matching familiar figures tests having from two to ten variants, the Design Recall Tests, and the Haptic Visual Motor Test) ranged from .33 to .73 for response time. The convergent validity for errors using the 10 versions of matching figures was .68 (Kagan et al., 1964).

Messer concludes his review by stating that "reflection-impulsivity remains moderately robust over changes in the MFFT" (p. 1032). All reliability and validity data are on the children's version of the MFF. No comparable information is available for adult performance on the MFF.

Draw-a-Man. Test materials for each subject consisted of a stack of 8 1/2" x 11" white unlined paper and three No. 2 pencils. The test was scored according to Harris' extension and revision of the Goodenough Draw-a-Man Test (Harris, 1963, pp. 248-263). Since there are no adult norms for this measure, the raw score was used as the data. All subjects were instructed specifically to "draw a man" so that all could be scored on the same criterion, as separate scoring systems are used for drawings of men and of women.

American College Test (ACT). ACT composite scores were obtained from the University records of consenting subjects, to be used as an approximate measure of intelligence. If only Standard Achievement Test (SAT) scores were available, the SAT Verbal score was converted to the appropriate ACT score according to the standard conversion table used by the University (see appendix A).

Procedure

The subject was seated behind a desk in a large, lighted office. The experimenter's chair was adjacent to the desk and slightly facing the subject to facilitate administration of tests.

Upon completing introductions, the subject was asked to read and sign a consent form granting or denying

the experimenter permission to obtain his/her ACT/SAT scores from the University files (Appendix B). This form explained the individual's right to the confidentiality of these files, one's freedom to refuse access to this information without prejudice or question, and the procedures to be taken so as to maintain the confidentiality of this information. Questions regarding these matters were answered at this time. All subjects were given all three tests regardless of whether or not permission was given to obtain this personal data.

The following tests were administered individually to each subject by the experimenter in the following order: Bender Gestalt Test, Matching Familiar Figures, and the Draw-a-Man. All subjects received identical instructions and administration procedures as outlined in the following paragraphs.

Bender. The administration procedures outlined by Hutt (1977, pp. 64-65) were followed. The following set of directions was given:

I am going to show you each of these nine cards, one at a time. Each card has a simple drawing on it. What I'd like you to do is to copy the drawing as well as you can. Work in any way that is best for you. This is not a test of artistic ability, but try to copy the designs as accurately as possible. Work as fast or as slowly as you wish.

These directions are as suggested by Hutt (1977, p. 64), with the addition of the word "nine" in the first sentence.

This change was made in order to combine Pascal and Suttell's method of administration with Hutt's. Pascal and Suttell (1951, p. 10) stress the importance of telling the subject the number of designs to be copied so as to allow for planning of size and arrangement on the paper.

MFF. The administration procedures followed and directions given were those printed inside the MFF booklet.

Now I am going to show you a picture of a familiar item and some pictures that look just like it. You will have to point to the picture on this bottom page (point) that is just exactly like the one on the top page (point). Let's do some for practice.... Now we are going to do some that are a bit harder. You will see a picture on top and eight pictures on the bottom. Find the one that is just like the one on the top and point to it.

During the MFF administration, the stop watch and recording sheet were kept behind the upright page of the MFF booklet so as to be out of the subject's view but available to the experimenter for recording each response and the latency to the first response for each item.

DAP. The following instructions were given:

Now I would like you to draw a picture of a man, a whole man. While you do this I will be down the hall. When you have finished, just open the door and I will return to take your paper. Please draw a whole man.

The experimenter left the room while the subject completed this test. This was done to facilitate an atmosphere in which the subject could work in whatever way was most comfortable,

which the presence of a passive experimenter might mitigate against. Upon completion of the DAP, any questions regarding the research were answered and the subject was dismissed.

In scoring, the protocols were separated by test and were scored in the following order: MFF, DAP, Pascal and Suttell, and Adience-Abience.¹ Separate scoring sheets for each test and scoring system were maintained. Only code numbers appeared on all protocols and scoring sheets. A master list linking each subject's name to a code number was maintained until 90 days after the first subject was run, at which time this list was destroyed.

¹In scoring Factor 8 of the Adience-Abience Scale (Angulation), it was found that the scoring system made no provision for the presence of both increased and decreased angulations within a single protocol. Such configurations were obtained in 12 protocols of this study. These were scored according to the number of decreased angulations occurring. The rationale for this was as follows: The presence of both increased and decreased angulations were thought by the experimenter to be a more abient deviation. Since decreased angles received the more abient score, protocols of mixed angle deviations were scored so as to imply a lack of adequate visual perception (abience).

CHAPTER IV

RESULTS

The Adience-Abience Scale attempts to measure a person's characteristic visual perceptual style ("openness" or "closedness") from their BG performance. This research addressed itself to the following questions: a) Does the Adience-Abience Scale specifically measure visual perception relative to all the perceptual-motor task requirements of BG performance?; b) Does this scale measure visual perception to a greater degree than other BG scoring systems?; and c) Does adience-abience relate to dimensions of reflection-impulsivity as measured by the MFF?

In analyzing the data relative to these questions, statistical procedures were computed using the Statistical Package for the Social Sciences unless otherwise referenced.

The High Adient and the High Abient Groups

In order to statistically test hypotheses regarding differences between adient and abient subjects, it was necessary to create a "high adient" and a "high abient" group. Prior to beginning the data analyses, it was decided that these groups would be comprised of those subjects scoring in the upper and lower third of the distribution of Adience-Abience scores, respectively.

For this sample, the high adient group was comprised of subjects obtaining a score of 30 or higher. The high abient group included those obtaining a score of 24 or below. All identical scores at these limits of the distribution were included, resulting in an adient group with an n of 18 and an abient group with an n of 20.

The Relationship of Sex and Intelligence to Adience-Abience

In order to analyze the data for sex differences relative to adience-abience, a t -test comparing the mean Adience-Abience scores of the male ($M=27.07$, $SD=3.76$) and female ($M=26.68$, $SD=5.18$) samples was conducted. The difference was not significant, $t(54)=-.32$, $p=.75$, as predicted by hypothesis four. As an additional control, the number of males and females within the extreme groups was compared. Of the 18 adient subjects, nine were male and nine were female. Of the 20 abient subjects, nine were male and eleven were female. Since adience-abience was not related to sex in the extreme groups or in the total sample, subsequent analyses were conducted on the data combined across this variable.

Differences in intelligence were assessed to test Hutt's theory. High adient subjects did not differ significantly from high abient subjects on intelligence (ACT scores), $t(36)=-1.41$, $p=1.66$. The means for each group

were 23.22 ($SD=4.5$) and 21.87 ($SD=3.87$), respectively. Results, then, were not confounded by group differences in intelligence.

Thus, the hypotheses predicting no relationship of sex and intelligence to adience-abience were supported.

The Information Processing Components of Adience-Abience and Pascal-Suttell Scores

The mean, standard deviation, and range of scores of each test are presented in Table 1. Within the information processing model followed in this study, MFF error was used as a measure of visual perception, MFF latency was used as a measure of conceptual tempo, and the DAP was used as a measure of visual-motor integration/motor coordination.

It was hypothesized that, with intelligence partialled out, visual perception would account for significantly more of the variance of Adience-Abience scores than either of the other two components. Several analyses were conducted to test this hypothesis. First, as presented in Table 2, two sets of bivariate correlations were calculated. The lower diagonal consists of the bivariate correlations of all the measures employed in this study. The upper diagonal consists of the partial correlations of these measures, the effects of intelligence having been partialled out.

Table 1

Means, Standard Deviations, and Ranges
of Scores on All Measures

Measures	Mean	Standard Deviations	Range
Adience-Abience	26.9	4.5	18 (18-36)
Pascal & Suttell	56.1	10.8	42 (37-79)
MFF errors	7.4	5.5	23 (0-23)
MFF latency	57.1	26.1	117.75 (18-135)
DAP	47.0	9.2	37 (26-63)
ACT	22.9	4.1	17 (12-29)

Note: N=56

The bivariate correlations of P/S, MFF error, and MFF latency with Adience-Abience scores were significant. MFF error correlated highly with MFF latency and intelligence (ACT score). The only correlation to change in level of significance once the effects of intelligence were held constant was that between Adience-Abience and P/S, which was no longer significant. However, since these two factors only shared .04% of the variance, they were quite independent measures even with intelligence not partialled out.

The fact that DAP scores did not correlate significantly with MFF error or MFF latency scores supports the notion that the DAP loads a separate subprocess of information processing from the other two tasks. The correlation between MFF error and MFF latency was the largest in the table, even when the effect of intelligence was removed. It appears that these tasks did not differentially load separate subprocesses as conceptualized for this information processing model.

Squaring the appropriate correlations revealed the amount of the variance of the Adience-Abience or P/S scores accounted for by each of the three subprocesses of the information processing model and by intelligence. These results relative to the Adience-Abience Scale are summarized in Figure 2. Intelligence accounted for 2.89% of the variance ($p=.11$). With intelligence partialled

Table 2

Intercorrelation Matrix

	Adience- Abience	Pascal and Suttell	MFF Error	MFF Latency	DAP
Adience- Abience		-.20	-.22*	.23*	-.10
Pascal & Suttell	-.22*		.17	.07	-.05
MFF Error	-.26*	.20		-.51	-.13
MFF Latency	-.25*	.05	-.52***		-.14
DAP	-.06	-.07	-.19	-.11	
ACT	.17	-.13	-.34**	.13	.20

Note: $N=56$

Note: IQ has been partialled out of the intercorrelations in the upper diagonal.

* $p < .05$

** $p < .005$

*** $p < .0001$

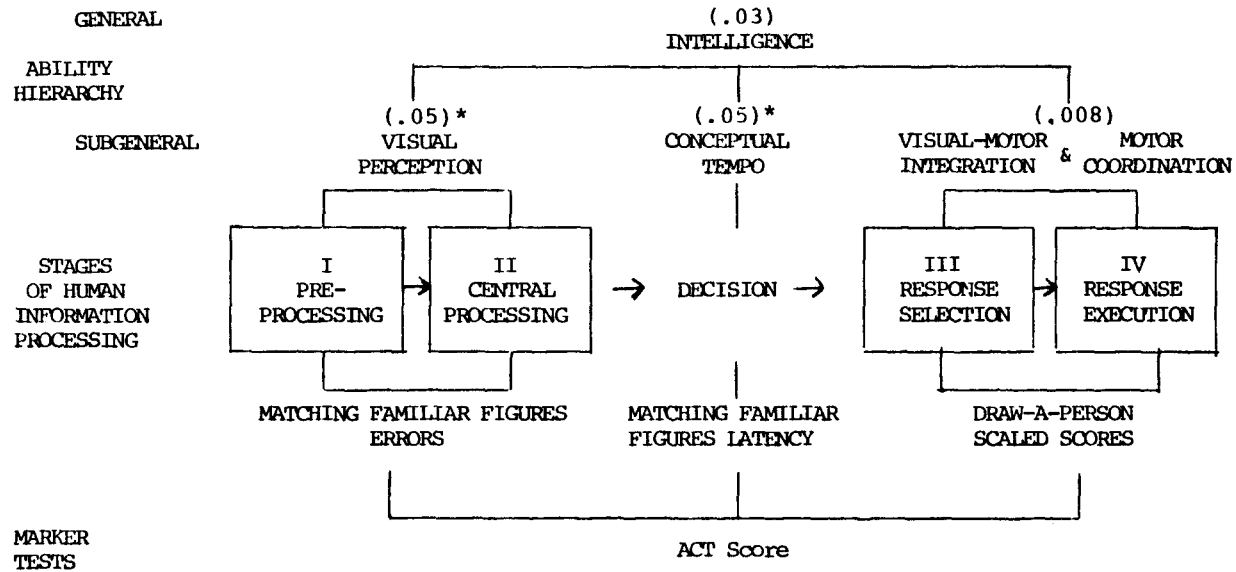


Figure 2. The results of the analysis of the Adience-Abience score variance accounted for by marker tests used to assess human information processing components. (Numbers in parentheses above each component in the ability hierarchy indicate the proportion of Adience-Abience variance accounted for by that component. Components at the subgeneral level of the ability hierarchy have intelligence (ACT scores) partialled out of the intercorrelations with the Adience-Abience scores.)

* $p < .05$

out visual perception accounted for 5% ($p=.05$) of the variance, and conceptual tempo accounted for 5% of the variance ($p=.05$). Visual-motor integration/motor coordination only accounted for .8% of Adience-Abience variance ($p=.24$). These results indicate that hypothesis one was not supported, since visual perception did not account for more of the Adience-Abience variance than conceptual tempo.

It was also hypothesized that visual perception would account for more of the variance of Adience-Abience scores than of P/S scores. Figure 3 summarizes the proportions of variance in P/S scores accounted for by each of the three subprocesses under study. Visual perception accounted for 3% of the variance, conceptual tempo for .4% of the variance, and visual-motor integration/motor coordination for .2% of the variance. None of these are significant, indicating that perhaps visual perception did account for more of the Adience-Abience score than the P/S score variance. A t -test between the partial correlations (Cohen & Cohen, 1975) of Adience-Abience with MFF error ($r=-.22$) and P/S with MFF error ($r=.17$) was marginally significant, $t(53)=1.88$, $p<.06$. This indicates that perhaps there was a trend in the data to support hypothesis two, that visual perception would account for more of the variance of Adience-Abience scores than of P/S scores.

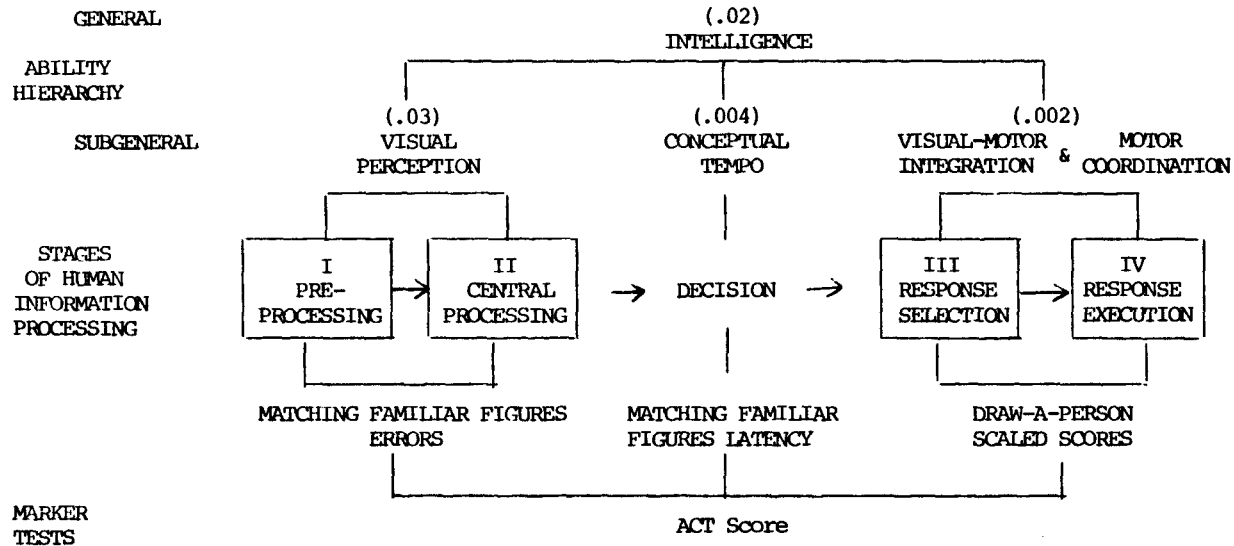


Figure 3. The results of the analysis of the Pascal and Suttell score variance accounted for by marker tests used to assess human information processing components. (Numbers in parentheses above each component in the ability hierarchy indicate the proportion of Pascal and Suttell variance accounted for by that component. Components at the subgeneral level of the ability hierarchy have intelligence (ACT scores) partialled out of the intercorrelations with the Pascal and Suttell scores.)

As a further test of hypothesis two, two additional partial correlations were calculated. One was the partial correlation of Adience-Abience score with MFF error, controlling for P/S and intelligence. The other was its mirror image for the P/S score; that is, the partial correlation of P/S with MFF error, holding Adience-Abience and intelligence constant. The respective partial correlations were nonsignificant: $-.20$ ($p=.08$) and $.13$ ($p=.18$). Although both correlations were in the predicted directions and the relationship between them is also in the direction predicted, because neither was significant they lend only tentative support to the hypothesis that visual perception accounts for more of the variance of Adience-Abience scores than of P/S scores.

These analyses of hypothesis one and two were based on bivariate correlations. These hypotheses were also tested in terms of the role of visual perception (MFF error) as an independent predictor (within the system of visual perception, conceptual tempo, and visual-motor integration/motor coordination as predictor variables) of Adience-Abience and P/S variance. To make such a comparison, two multiple regression equations were computed. Adience-Abience was the dependent variable in one, and Pascal and Suttell score was the dependent variable of the other. In both analyses, IQ was entered as the first

predictor variable. MFF error, MFF latency, and DAP scores were entered simultaneously as predictor variables once IQ was removed. Both the Adience-Abience and Pascal and Suttell multiple regression equations were nonsignificant $F(4, 51)=1.48$, and $F(4, 51)=1.04$, respectively. Visual perception (MFF error) was not a significant independent predictor variable of either dependent variable, thus no support for hypothesis two was demonstrated.

Moreover, since the results of the multiple regression analysis reveal that MFF error was not a significant independent predictor of Adience-Abience score relative to the system of MFF error, MFF latency, and DAP scores as predictor variables, hypothesis one was not supported. That is, there was not evidence that visual perception accounts for more of the variance (i.e., is a better predictor) of Adience-Abience score than conceptual tempo or visual-motor integration/motor coordination.

In summary, it was found that visual perception does account for a significant portion of the variance of Adience-Abience scores, but not to a greater extent than conceptual tempo. In addition, the multiple regression equation reveals that, despite this correlation, MFF error was not a strong independent predictor of Adience-Abience within the given system of predictor variables. Thus hypothesis one was rejected.

With regard to the role of visual perception in Adience-Abience scores versus in P/S scores, comparison of the partial correlation coefficients of Adience-Abience and MFF errors (holding IQ and P/S) to that of P/S and MFF errors (holding IQ and Adience-Abience) revealed that, although the former was stronger, neither were significant. In addition, a t-test between the partial correlations of P/S and Adience-Abience with MFF error (holding IQ constant) approached, but did not reach, statistical significance. Furthermore, the multiple regression equations demonstrated that visual perception was not a significant independent predictor of Adience-Abience or P/S scores. Thus, hypothesis two must be rejected.

Relationship of Reflection-Impulsivity to Adience-Abience

In order to explore the relationship between adience-abience and reflection-impulsivity, several comparisons between high adient and high abient individuals on various aspects of the reflection-impulsivity dimension were conducted.

Hypothesis five predicted a significant relationship between adience-abience and number of errors on the MFF, with abient subjects producing more errors than adient subjects. A t-test between the mean MFF error scores of the high adient and high abient groups was not significant,

although the trend of scores is as predicted, $t(36)=1.68$, $p=.10$. The mean number of errors of the high adient group was 6.1, while that of the high abient group was 9.2. The respective standard deviations were 5.6 and 5.7.

In order to classify and compare these subjects on the accurate/inaccurate and fast/slow dimensions of MFF performance, cut-off scores for differentiating accurate/inaccurate and fast/slow performances were determined from the frequency distributions of this sample on MFF error and MFF latency scores, respectively. In further testing hypothesis five, then, a chi square analysis of the number of high adient and high abient subjects falling into the accurate and inaccurate categories was found to be significant, $\chi^2(1)=5.17$, $p<.02$. This supports the trend noted in the t -test results. However, it was not a sufficiently powerful statistic to warrant support for the acceptance of hypothesis five.

In exploring the relationship of adience-abience to decision time, a t -test between the mean MFF latency scores of high adient ($M=64.53$, $SD=7.15$) and high abient subjects ($M=49.21$, $SD=5.48$) revealed no significant difference, $t(36)=-1.72$, $p=.09$. In a further exploration, a chi square analysis of the number of high adient and high abient subjects falling into the fast ($n=7$, $n=12$, respectively) and slow ($n=11$, $n=8$, respectively) categories

on the MFF was not significant, $\chi^2(1)=.95$, $p=.33$. Thus, it appears that MFF latency was unrelated to audience-ability.

To explore the relationship between reflection-impulsivity and audience-ability, a 2x4 chi square analysis was planned to compare the number of high ability and high audience-ability subjects in each of the four categories resulting from the latency x errors median split. However, half of the valid cells had expected cell frequencies of less than five. Since these were the S/I and F/A cells rather than the impulsive or reflective ones, and since no research or theoretical work has been done on the S/I and F/A categories, a 2x2 chi square was done instead on audience-ability and reflection-impulsivity. This was marginally significant, $\chi^2(1)=3.57$, $p=.06$, with high ability subjects tending toward inclusion in the reflective category while high audience-ability subjects were more likely to be in the impulsive category. Thus, there was a trend toward a relationship between audience-ability and reflection-impulsivity, but further research is needed before such a relationship can be considered to have solid empirical evidence supporting it.

The following points summarize the results regarding the relationship of reflection-impulsivity to audience-ability:

1) MFF latency was not related to adience-abience.

2) There was a trend toward a relationship between MFF errors and adience-abience, with abient subjects more likely to fall into the inaccurate performance category, but this did not reach significance on the more powerful tests of this relationship.

3) There was a trend toward a relationship between adience-abience and reflection-impulsivity, with high adient subjects more likely to be reflective and high abient subjects more likely to be impulsive. This approached, but did not achieve, statistical significance.

Summary

The following summarizes the results of this study relative to the three main experimental hypothesis:

1) It was not demonstrated that the Adience-Abience Scale specifically measures visual perception relative to all the perceptual-motor task requirements of BG performance;

2) It was not demonstrated that the Adience-Abience Scale measures visual perception to a greater extent than other BG scoring systems;

3) It was not demonstrated that Adience-Abience was related to MFF latency scores, MFF error

scores, or to reflection-impulsivity, although there was a trend toward a significant relationship with the error scores.

CHAPTER V

DISCUSSION

As a whole, the results of this study fail to support the experimental hypotheses derived on the basis of Hutt's formulations regarding the relationship between visual perception and adience-abience.

A main hypothesis stated that one information processing component, visual perception, would account for more of the variance of Adience-Abience scores than either of the other two components, conceptual tempo and visual-motor integration/motor coordination. In examining the proportion of the variance accounted for by each component, it was seen that both visual perception and conceptual tempo accounted for significant and equivalent portions of Adience-Abience variance.

The other major hypothesis held that visual perception would account for more of the variance of Adience-Abience scores than of P/S scores. Statistical tests of these relationships did not support this hypothesis, although there was some indication of a trend toward the predicted relationship.

These results are in contrast to the theoretical formulations of Hutt. Because the analysis of the information processing components of the Adience-Abience scores

and the comparison of such to a similar analysis of an alternate system for scoring the BG had not been previously conducted, there are no research findings for comparison. Some of the possible explanations for the lack of support for these hypotheses will be considered.

One interpretation of the negative results is that this accurately reflects the fact that the Adience-Abience Scale is not an instrument for measuring visual-perceptual style and does not uniquely measure visual perception in comparison to other BG scoring systems. However, there were certain features of this study that may explain the lack of support. These matters need to be corrected and further research conducted in order to determine if the Adience-Abience Scale does measure visual-perceptual style.

One factor to consider in speculating on the lack of positive results is that the range of scores on the Adience-Abience Scale was somewhat limited. Of the possible 39-point range, the college sample studied here scored from 18 to 36, a 19-point range at the adient end of the continuum. A constricted range of scores necessarily limits the degree of correlation between the two variables, so the range of Adience-Abience scores may account for the small correlations obtained. It is possible that the college sample studied was too homogeneous in makeup to evidence sufficient variability in adience-abience. The

sample is necessarily limited to a relatively narrow IQ and psychopathology range in that each person had to have been functioning on a certain intellectual level and within the parameters of "normal adjustment" to enter and function in college. The ACT scores of this sample only ranged over 17 points.

That the sample may have been so homogeneous as to limit the variability of Adience-Abience scores is an important point, since the cut-off scores designating inclusion into the high adient and high abient groups were determined on the basis of the sample scores. It is important to consider whether the resultant groups were actually representative of a high adient and a high abient group or whether, due to the sample under study, these groups were a high adient and a low or medium abient group, for example. Given the lack of adequate norms, however, such a discrimination is difficult to make.

If the group labelled high abient was really not representative of that style but merely an artifact of the sample under study, recommendations regarding the use of more heterogeneous populations in future research would be in order. For example, both Kachorek (1969) and McConville (1970) note a limited variability in the samples they studied and suggest that future research be conducted on more heterogeneous populations. This is an important recom-

commendation in itself in that the generalizability of findings depends on the nature of the population under study. However, Hutt (1976) makes the point that each person adopts a visual perceptual style that falls somewhere along the adience-abience continuum, and the Adience-Abience Scale measures this. If, as Hutt writes in 1980, this visual perceptual style is unrelated to age, sex, and intelligence (which has not been borne out by the data regarding the intelligence variable, as noted earlier), then this style ought to be observable in a normal, relatively homogeneous population, with differences observable between those high on adience and on abience. The purpose of this study was to explore adience-abience in a normal population.

The available parametric data regarding adience-abience in several studies, including the present one, is provided in Table 3 to allow for comparison. Although we cannot be certain that the present sample was equivalent to those studied previously, it was quite similar given what data is there for comparison. In a study of slightly more limited range and having a slightly lower mean score (Kachorek, 1969), no significant results were obtained regarding a relationship between adience-abience and field dependence-independence. However, McConville (1970) found a significant relationship between adience-abience

Table 3

Parametric Data Regarding Adience-Abience Scores Obtained
in Several Studies

Study	Population	N	Mean	Standard Deviation	Range
Present	college students	56	26.9	4.5	19 (18-36)
	(high adient)	(18)	(32.0)		
	(high abient)	(20)	(21.9)		
Credidio (1975)	outpatient clients				
	(high adient)		(30.5)		
	(high abient)		(20.2)		
McConnville (1970)	college females	41	25.8	3.4	"95% in 11 patient range at upper end"
Kachorek (1969)	academic community	52	25.1	3.2	16 (15-30)

and field dependence-independence based on a sample having a more restricted range of scores but a similar sample mean relative to the present study. The subjects studied by Credido (1975) evidenced similar means for the extreme groups to those of the present study. He found significant differences between these groups on amount of visual stimuli perceived immediately and the amount recalled after a one-week interval.

Thus, significant results have been found in populations relatively similar in adience-abience scores to the one studied here. Perhaps the lack of positive results cannot be attributed to the homogeneity of the population sampled. Kachorek (1969) found that the first four factors of the 1969 version of the Adience-Abience Scale (Height & Width, Width Only, Use of Page, and Sequence) "appear to have the potential to discriminate between adience and abience in a normal population" (p. 28). He also found that on four of the 13 factors scored (although he does not say which four), the entire sample of normal subjects received the same positive adience score. This suggests that some factors are strong and others weak in differentiating between normal adient and abient subjects. Kachorek's recommendation that "the total score for the adience-abience scale may need refinement for the 'normal' population" (1969, p. 37) may be more in order than a call to study more heterogeneous populations.

It seems that most of the significant results regarding the relationship of adience-abience to other variables have been obtained in more disturbed populations. Whether this is due to the lack of adequate controls in these studies, to the high correlation of psychopathology with abience, to a failure of the Adience-Abience Scale as a useful instrument in a normal population, or to some other factors is not clear. A possible explanation for the differences between populations may be that in a normal, well-defended individual, a basic perceptual style such as adience-abience may be masked by higher order adaptive defenses.

Additionally, the marker tests used as measures of the independent variables of this study need to be considered for their role in the failure to obtain significant results. The measures were the same as those employed by Blaha et al. (1979) in analyzing the information processing components of children's BG error scores as measured by Koppitz (1963). The MFF and DAP were used as they conceptually loaded the task requirements of the BG. The results of the research supported their choice of these measures as differentially loading the subprocesses under study. However, difficulties arose in this study relative to both measures. On the MFF, it is generally to be expected that with longer latency times the number of errors

decreases. In the Blaha et al. research, the correlation between MFF latency and MFF error was significant at the .05 level. With the effect of intelligence partialled out, however, the correlation was smaller and nonsignificant.

In the present study, the adult version of the MFF was administered. The negative correlation between MFF errors and latency was significant at the .0001 level, and did not change appreciably when intelligence was partialled out. This high correlation necessarily made it more difficult to find significance with a multiple regression analysis. A multiple regression equation reveals the amount of variance predicted independently by a single variable within a system of predictor variables. MFF error and latency correlated so strongly as to decrease the amount of variance each can predict independently. Since errors were so strongly related to tempo, the MFF error score may not be a pure measure of visual-perceptual style. Thus, the strong relationship between these two variables mitigated against finding significant results in the multiple regression analysis.

A further difficulty was noted concerning the measurement of the independent variables of this study. In the Blaha et al. (1979) study, 25% of the variance was accounted for by the marker tests after the effects of

intelligence were partialled out. The amount of variance of Adience-Abience and P/S scores accounted for once intelligence was partialled out was only 11% and 5.5%, respectively, of the total variance of those scores. The question can be raised: To what can the remainder of the variance be attributed to? If it is not to be assumed that the rest of the variance is actually error variance, then consideration must be given as to whether the marker tests used were weak measures of the subprocesses they were chosen to represent. Furthermore, none of these three measures correlated significantly with P/S scores, although they would be expected to do so on the basis of the known task requirements of the BG.

Analyzing the nature of each task conceptually, as done by Blaha et al., it would seem that the marker tests used are strong measures of the appropriate subprocesses of information processing. For instance, the MFF seems to have a largely visual and tempo task requirements with little visual-motor integration or motor coordination involved in successful performance. The DAP appears to have few immediate visual-perceptual requirements as it is a self-generated, rather than a match-to-standard, task. Conceptual tempo also would seem to play little role in DAP performance, since, as it is understood, conceptual tempo is pertinent to tasks

with a forced-choice format having a single correct answer. The DAP is obviously not such a task.

The results lead us to question why, as a measure of visual-motor integration/motor coordination, DAP scores failed to correlate significantly with either Adience-Abience or P/S scores, and why, in the same vein, did DAP scores account for only 2% and .8% of the variance of Adience-Abience and P/S scores, respectively.

The range of DAP scores was large (37 points), so correlations were not limited by a constricted range of scores on this measure. Perhaps performance and score on the DAP are confounded by creativity, comfort level, and/or prior experience. Furthermore, these factors may be at work to a greater extent in adults than in children. It may be that subjects regarded drawing as childish, which might in turn influence the manner in which the task was approached. Along these lines, it is the experimenter's estimate that 75% of all subjects demonstrated some kind of objective and/or subjective discomfort when given the directions for the DAP. These indices ranged from making faces to making disclaimers regarding a lack of drawing ability. This task seemed to make many subjects anxious in a way the more structured BG drawing task did not. Perhaps there was an anxiety factor that influenced the DAP scores and thereby affected the lack of correlation between DAP scores and BG performance.

However, these conjectures are based only on the clinical perceptions and observations of the experimenter and would require empirical testing in order to validate them as explanations of the results of this study.

At this point it is not clear what marker tests might be substituted for those used in this study to improve the measurement of the information processing requirements of the BG.

An additional possibility to explain the lack of support for the experimental hypotheses in this study might be that there was some kind of order effect at work. The order of the administration of the tasks was not randomized. Whether the fact that the DAP was administered following the MFF influenced the results is not clear, but most subjects were observed by the experimenter to find the MFF very challenging, occasionally to the point of frustration.

In sum, then, it can be seen that the difficulty in separating the components of perception, tempo, and visual-motor integration/motor coordination, particularly in an adult population, has probably worked against the accurate description of the relative contributions of the various information processing components to Adience-Abience and P/S scores. This may account for the lack of positive results regarding the role of visual percep-

tion in the Adience-Abience score itself and relative to its role in determining the P/S score.

Possibly the most interesting results of this study were the trends, although not reaching statistical significance, for MFF errors and reflection-impulsivity to be related to adience-abience. Further research is needed in regard to whether the noted trend is indicative of a real relationship between these perceptual and cognitive styles. If abience were found to relate strongly to inaccurate MFF performance and a strong impulsive style, it might be considered as support for the adience-abience construct, given the research regarding the perceptual correlates of reflective and impulsive styles. Drake (1970) studied the eye fixations of reflective and impulsive subjects on a match-to-standard task like the MFF. She found that each group employed different but characteristic strategies. In contrast to reflective subjects, impulsive subjects visually regarded a smaller portion of the area of the stimuli and did so less thoroughly, making half the number of comparisons between homologous parts of different figures. Stylistically, impulsive subjects often responded on the basis of only a limited amount of information gathered in a less careful manner than reflective subjects. They were also less likely than reflective subjects to review the data on which they formed their decisions.

These perceptual correlates might be related to the finding of this study that abient subjects made more errors than adient subjects and that abience tends to be related to impulsivity and adience to reflection. As Hutt might be expected to predict, abient subjects may take in less visual data and be less effective than adient subjects in their strategies for obtaining the necessary information to make a choice based on visual discriminations. One might then expect adient subjects to fall largely into either the fast/accurate or reflective (slow/accurate) categories of MFF performance. That is, adient subjects would perform largely accurately but would differ among themselves in relation to the time required to produce accurate responses. Abient subjects might be expected to perform inaccurately and thus tend toward inclusion in the impulsive (fast/inaccurate) or slow/inaccurate categories of MFF performance, depending on their average latencies. Conducting a study similar in methodology to that used by Drake (1970) to compare high adient and high abient subjects would be an interesting experiment that might contribute useful information regarding the perceptual correlates of adient and abient styles, especially relative to Hutt's theoretical formulations.

In reviewing all the literature on adience-abience toward formulating suggestions regarding areas for further research, some general considerations should be noted.

Understanding and researching adience-abience is made difficult by several factors. One is that nearly all the writing and research on the subject comes from Hutt himself. Some of the research has been poorly designed, weakening the power of the conclusions derived from those results, yet Hutt extrapolates a great deal of support for his theory from such results. It is often unclear where the evidence for the theoretical formulations and scale construction has come from.

Furthermore, there has been very little revision or integration of theory in response to empirical findings. Inconsistent results often go unmentioned, unexplained, and/or unintegrated. Criticisms or revisions suggested by the data or other researchers appear to go unheeded. Areas of considerable confusion, such as the relationship of adience-abience to intelligence and psychopathology, remain confused conceptually, making it difficult to regard these relationships empirically.

A few of the revisions that need to be considered will be briefly mentioned here. These are in the areas of 1) the definition of adience-abience; 2) the measure-

ment of adience-abience; 3) the clinical use of adience-abience data; and 4) theoretical formulations regarding the relationship of adience-abience to some other variables.

Hutt's conception of adience-abience as a defensive mode creates a theoretical inconsistency. Credidio (1975) makes the following criticism and revision of adience-abience theory:

The concept of defense implies a state of inner conflict (Wolman, 1973). If, as Hutt theorizes, an infant tends to become more adient-oriented as long as his perceptual experience with the world is favorable, it is incongruous to view adience-abience primarily as a defensive style. This notion does not preclude considering perceptual abience to be a defense... (pp. 72-73).

Such a revision would eliminate this inconsistency and might promote further elucidation of the adience-abience construct.

Regarding the measurement of adience-abience, it was noted earlier that the Adience-Abience scoring system for deviations in angulation (Factor 8) is inadequate as there is no provision for the occurrence of both increased and decreased angles within a single protocol (see footnote, p. 58). Appropriate changes in the standard scoring system need to be made in order to rectify this situation and provide a standard, quantitative means for scoring such configurations.

In terms of the clinical use of adience-abience data, Hutt (1977) recommends that a score of 21 be used as an indication that an individual can "improve" (p. 164). It is not clear what he means by this. It may refer to an ability to profit from a psychotherapeutic-type intervention toward the amelioration of the pathology, or may regard becoming less abient and more adient with training. However, clarification of this statement, and some of the thinking behind the choice of 21 as the cut-off score would be useful. Do scores of 21 and below indicate a high abient style? If so, then future research could use 21 as the standard cut-off for inclusion in the high abient group. However, first Hutt needs to make more clear what was meant by this statement.

The status of the relationship of adience-abience to intelligence and psychopathology is very unclear, both from the theoretical and empirical standpoints. In relation to the empirical findings regarding intelligence and adience-abience, the present study failed to find a significant relationship between these variables. The range of ACT scores was limited (17 points), and different results may have been obtained had a more powerful measure of IQ, with greater variance, been used.

As noted earlier, previous findings in this area are inconclusive. Some researchers have found adience-

abience to be related to intelligence (Hutt, Dates, & Reid, 1977; Hutt and Feuerfile, cited in Hutt, 1977) while others have not (Credidio, 1975; Hutt, 1969b; Hutt & Miller, 1976).

With regard to the theoretical conception regarding the relationship between intelligence and adience-abience, Hutt's recent reversal of position is puzzling, as has been noted. This confusion is exacerbated by the fact that the theoretical underpinnings of adience relate it strongly to the ability to profit from, learn from, and integrate new experiences. If this is so, then adience might be predicted to relate to intelligence. And if it does relate to intelligence strongly, research must demonstrate that the Adience-Abience Scale does in fact measure visual perception, which was not demonstrated in the present study, and that it does so independently of intelligence. Some revision, integration, or clarification of theory in this area is needed to both remedy theoretical inconsistencies and integrate or at least address contradictory empirical results.

Hutt predicts that adience-abience is related to psychopathology, especially at the extremely disturbed end of the psychopathology continuum (Hutt & Miller, 1976). The strong relationship predicted has been obtained in just about half the research in this

area. However, the fact that half the research has not supported the theory needs to be addressed and discussed in terms of its implication to theory. Given the various methodological difficulties in most of the studies where supportive results were obtained, the status of the relationship between these variables remains unclear.

In terms of directions for further research, one necessary step before the above relationships can be adequately investigated would be the compilation of a greater body of normative data. Based on larger and more heterogeneous populations, such norms would likely be of more utility than the present ones. If norms could be established for designation of a high adient and high abient group, many methodological difficulties would be circumvented in future research. Salkind (1975) demonstrates the limited generalizability of research results when classifications have been based on sample-generated norms. Although the means and standard deviations across samples may be equivalent, medians may be quite different, and thus classifications for individuals with identical scores may be different in different samples.

Given these general considerations, the most important area of future research regarding adience-abience is probably one along the lines of the present study, comparing the Adience-Abience Scale to other BG scoring

systems to determine if, in fact, this scale measures something different than the other scoring systems, and if this difference is specifically related to an aspect of visual perception. An expansion and replication of Credidio's (1975) study testing subjects at extreme ends of both the Adience-Abience Scale and an alternate scoring system of the BG for differences in visual perception would potentially be very useful in that the methodology may avoid some of the difficulties met in this study and might test more effectively whether the Adience-Abience Scale measures visual perception relative to other BG scoring systems.

Furthermore, sound empirical evidence regarding intelligence and psychopathology in relation to adience-abience should be gathered. This is especially so in light of the fact that the ability of the Adience-Abience Scale to measure visual perception relative to other BG scoring systems has not yet been demonstrated. That is, it is not yet clear what the Adience-Abience Scale does measure and empirical data toward this end needs to be gathered. It is imperative that research in the field of adience-abience control for intelligence and psychopathology so as to help clarify what relationships exist and to avoid confounding by these variables.

REFERENCES

- Blaha, J., Fawaz, N. & Wallbrown, F.H. Information processing components of Koppitz errors on the Bender Visual-Motor Gestalt Test. Journal of Clinical Psychology, 1979, 35, 784-790.
- Byrne, D. The Repression-Sensitization Scale: Rationale, reliability, and validity. Journal of Personality, 1961, 29, 334-339.
- Chapman, L.J. & Chapman, J.P. Disordered thought in schizophrenia. Englewood Cliffs, New Jersey: Prentice-Hall, 1973.
- Cohen, J. & Cohen, P. Applied multiple regression: Correlational analyses for the behavioral sciences. Hillsdale, New Jersey: Lawrence Earlbaum Associates, 1975.
- Credidio, S.G. A construct validity study of a measure of perceptual approach-avoidance. Dissertation Abstracts International, 1976, 37, 3067B (University Microfilms No. 76-28,555).
- Drake, D.M. Perceptual correlates of impulsive and reflective behaviors. Developmental Psychology, 1970, 2, 202-214.
- Harris, D.B. Children's drawings as measures of intellectual maturity. Chicago: Harcourt, Brace, & World, Inc., 1963.
- Hutt, M.L. The Hutt Adaptation of the Bender Gestalt Test (2nd ed.). New York: Grune & Stratton, 1969 (a).
- Hutt, M.L. Potentiality of a measure of perceptual adience-abiencie in predicting inner psychological adaptability. Proceedings of the 77th Annual Convention of the American Psychological Association, 1969, 4 (Pt. 2), 509-510. (Summary) (b)
- Hutt, M.L. The significance of perceptual adience-abiencie in child development. In D.V.S. Sankar (ed.), Mental health in children (Vol. 2). Westbury, New York: P.J.D. Publications, 1976.
- Hutt, M.L. The Hutt Adaptation of the Bender Gestalt Test (3rd ed.). New York: Grune & Stratton, 1977.

- Hutt, M.D. Adience-abience. In R.H. Woody (ed.), Encyclopedia of clinical assessment (Vol. II). San Francisco, Jossey-Boss, 1980.
- Hutt, M.L. & Briskin, G.J. The Hutt Adaptation of the Bender Gestalt Test. New York: Grune & Stratton, 1960.
- Hutt, J.L. & Dates, B.G. Reliabilities and interrelationships of two HABGT scales in a male delinquent population. Journal of Personality Assessment, 1977, 4, 353-357.
- Hutt, M.L., Dates, B.G., & Reid, D.M. The predictive ability of the HABGT scales for a male delinquent population. Journal of Personality Assessment, 1977, 41, 492-496.
- Hutt, M.L. & Miller, L.J. Further studies of a measure of adience-abience: Reliability. Journal of Personality Assessment, 1975, 39, 123-128.
- Hutt, M.L. & Miller, L.J. Interrelationships of psychopathology and adience-abience on the HABGT. Journal of Personality Assessment, 1976, 40, 138-139.
- Kachorek, J. Relationship between measures of adience-abience and field independence-dependence. Unpublished master's thesis, University of Detroit, 1969.
- Kagan, J. & Messer, S.B. A reply to "Some misgivings about the Matching Familiar Figures Test as a measure of reflection-impulsivity." Developmental Psychology, 1975, 11, 244-248.
- Kagan, J., Rosman, B.L., Day, D., Albert, J. & Philips, W. Information processing in the child. Psychological Monographs, 1964, 78 (1, Whole No. 578).
- Koppitz, E.M. The Bender Gestalt Test for Young Children. New York: Grune & Stratton, 1963.
- Koppitz, E.M. The Bender Gestalt Test for Young Children (Vol. 2). New York: Grune & Stratton, 1975.

- McConville, M.G. Perceptual adience-abience and social field dependency: An attempt at construct validation. Unpublished master's thesis, University of Detroit, 1970.
- Messer, S.B. The effect of anxiety over intellectual performance on reflection-impulsivity in children. Child Development, 1970, 41, 723-738.
- Messer, S.B. Reflection-impulsivity: A review. Psychological Bulletin, 1976, 83, 1036-1052.
- Neisser, U. Cognitive psychology. New York: Appleton-Century-Crofts, 1966.
- Pascal, G. & Suttell, B. The Bender Gestalt Test. New York: Grune & Stratton, 1951.
- Petrie, A. Individuality in pain and suffering. Chicago: The University of Chicago Press, 1967.
- Postman, L. On the problem of perceptual defense. Psychological Review, 1953, 6, 198-206.
- Schnierla, T.C. An evolutionary and developmental theory of biphasic processes underlying approach and withdrawal. In M.R. Jones (ed.), Nebraska Symposium on Motivation (Vol. 7). Lincoln: University of Nebraska Press, 1959.
- Smith, E.E. Choice reaction time: An analysis of the major theoretical positions. Psychological Bulletin, 1968, 69, 77-110.
- Sullivan, H.S. The interpersonal theory of psychiatry. New York: Norton, 1953.
- Tolor, A. & Schulberg, H.C. An evaluation of the Bender-Gestalt Test. Springfield, Illinois: Charles C. Thomas Publisher, 1963.
- von Bekesy, G. Sensory inhibition. Princeton: Princeton University Press, 1967.
- Witkin, H.A., Dyk, R.B., Faterson, H.F., Goodenough, D.R., & Karp, S.A. Psychological differentiation, Princeton: Princeton University Press, 1962.

REFERENCES NOTES

1. Salkind, N.J. The development of norms for the Matching Familiar Figures Test. Unpublished manuscript. (Available from Neil J. Salkind, Bailey Hall, University of Kansas, Lawrence, Kansas, 66045.)

APPENDIX A

APPENDIX A

Conversion Table for SAT Scores

Composite ACT score	Percentile	Verbal SAT score
31	99	700
30	98	690
	97	680
	96	670-660
29-----	95-----	650
	94	640
	93	630
	92	620
28-----	91-----	610
	90	600
	88	590
27-----	86-----	580
	84	570
	82	560
	80	550
26-----	79-----	540
	76	530
	73	520
25-----	71-----	
	70	510
	67	500
	64-----	490
24-----	63-----	
	60	480
	57	470
23-----	54-----	460
	51	450
	48	440
22-----	45-----	430
	41	420
21	37	410
	33	400
20-----	29-----	390
	26	380
19	23	370
	20	360
18-----	17-----	350

Composite ACT score	Percentile	Verbal SAT score
	15	340
17	13	330
	10	320
16	9	310
	7	300
15-----	6-----	290
	5	280
14	4	270
13	3	260
12-----	2-----	250
11	1	240

This table is the conversion table used by Ph.D.-granting institutions. The percentages would vary for other types of schools.

APPENDIX B

APPENDIX B

Consent Form

The purpose of this research is to study human information processing and to assess the validity of a psychological testing instrument. As a part of this study, it is necessary to have as a piece of data your SAT and/or ACT scores. These are on record in the university's files. You have the right to the privacy of your record. To obtain this information, I would require your written consent.

The following procedures would be employed to insure the confidentiality of everyone granting this permission:

- 1) A master list linking your name to your code number will be kept in a locked drawer. Only the experimenter will have access to this list. All materials used in testing today will be coded with your number. No names will appear on the materials we use today.
- 2) Only this experimenter will be permitted to enter your file, and only for the purpose of obtaining SAT and ACT scores.
- 3) Once these scores are obtained and recorded to your code number (no later than 90 days from today's date), the code list will be severed from the name list and each will be separately burned.

It is your right to grant or deny access to such information without explanation or prejudice. In either case, you will be able to participate in the project today so that you may receive credit for doing so.

_____ I give my permission to Loretta Lobbia to obtain ACT and/or SAT scores from my university record.

_____ I do not give permission for access to my university record.

Date _____ Signed _____
 Witnessed _____

APPROVAL SHEET

The thesis submitted by Loretta E. Lobbia has been read and approved by the following committee:

Dr. J. Clifford Kaspar, Director
Associate Professor, Psychology, Loyola

Dr. Patricia A. Rupert
Assistant Professor, Psychology, Loyola

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the Committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Masters of Arts.

12/15/81
Date

J. Clifford Kaspar
Director's Signature