

THE RELATIONSHIP BETWEEN INFORMATION PROCESSING  
SYSTEMS AND MORAL REASONING AND ITS  
ASSOCIATED AFFECT

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THESIS

Submitted in partial fulfillment of the  
requirements for the degree of Master of Education  
in Education Psychology in the Faculty of  
Graduate Studies at the University of  
Manitoba, 1984

Winnipeg, Manitoba

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MASTER OF EDUCATION

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## ABSTRACT

This study examined the relationship between information processing system preference and the level of maturity in moral reasoning and its associated moral affect in a sample of rural adolescent volunteers. The study was guided by Kohlberg's stage-developmental model of moral development and a dual-code model of information processing. The information processing model distinguishes two code preferences on a continuum from a verbal code preference on one extreme to an image code preference on the other. An ambimodal code preference represents a combination of the two extreme code preferences. The major hypothesis of the study stated that ambimodal subjects would achieve lower scores on both the test of ethical reasoning maturity and the test of positive affect use than either verbal or image code preference subjects. In addition, it was hypothesized that the verbal code preference subjects would achieve higher scores on the test of ethical reasoning maturity than either the ambimodal or image code preference subjects. Similarly, it was hypothesized that image code preference subjects would achieve higher scores on the test of positive affect use than either ambimodal or verbal code preference subjects. Finally, it was hypothesized that positive affect would be associated with higher moral reasoning scores. The study employed the following instruments: a) a modified version of the interview test used by Riding and Calvey (1981) to determine code preference, b) the Ethical Reasoning Inventory (ERI), and c) an objective test of positive affect developed specifically for the present study. Volunteers were drawn from three rural school divisions in a Western Canadian Province. Sixty subjects were chosen from this group of volunteers on the basis of the code preference test results. Results showed that information processing code preference was not significantly related to

either moral reasoning maturity level or associated moral affect. Average ethical reasoning score, however, may have been influenced by an interaction effect between code preference and the method of administration of the ERI used in this study. Moral reasoning and positive affect were not significantly related to one another. An ancillary investigation failed to corroborate the Riding and Calvey (1981) research. Riding and Calvey's research had found that verbal code preference correlated with abstract prose passage recall and image code preference correlated with descriptive prose passage recall.

## ACKNOWLEDGEMENTS

Many Thanks to

Dr. Riva Bartell

for chairing my committee and steering  
me through its complexities

Dr. Joanne Keselman

for her help with statistical analysis

Dr. Desmond Fillis

Dr. Kelvin Seifert

for their comments and suggestions

Dr. Imogene McIntire

for helping me formulate the basic ideas

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## CHAPTER I

### NATURE OF THE STUDY

### PURPOSE OF THE STUDY

The purpose of this study was to examine the relationship between information processing system preference and the level of maturity in moral reasoning and its associated moral affect in a sample of rural adolescent volunteers. The study was guided by Kohlberg's stage-developmental model of moral development and a dual-code model of information processing. The information processing model distinguishes two code preferences on a continuum from a verbal code preference on one extreme to an image code preference on the other. An ambimodal code preference represents a combination of the two extreme code preferences.

An ancillary purpose of this study was to corroborate Riding and Calvey's (1981) research which related code preference to prose passage content comprehension.

### BACKGROUND AND SIGNIFICANCE OF THE STUDY

When Kohlberg first formulated his stage-developmental theory of moral development, the basis for the theory was a lengthy series of interviews with North American male adolescents and pre-adolescents. His subjects were asked to respond orally to hypothetical moral dilemmas. On the basis of these interviews and the ages of the subjects interviewed, Kohlberg outlined, in ordinal scaled form, the type of moral reasoning prevalent at certain ages. This research became the basis for his stage-developmental model of moral development. Kohlberg outlined a stage progression from deference to an external authority, "me first", consideration of significant others, deference to the "golden rule" morality and, finally, a principled meta-ethical

stage. This highest level involved the objective analysis of why one chooses a certain principle as exemplifying one's moral viewpoint.

Since 1969, Kohlberg's work has been extensively challenged on a theoretical basis. Most fundamentally, the result of the theoretical challenges was the exclusion of what became known as the meta-ethical stage from any research done with non-western subjects. At the same time, sharp distinctions were made between the form of the stages and arbitrary and ethnocentric content. These revisions to Kohlberg's theory were guided by the work of J. C. Gibb (1977, 1979). Other researchers contended that moral reasoning was only one aspect of the moral development field. Writers such as Simpson (1976) and Hoffman (1976) emphasize the role played by affect in moral decisions. A third aspect of moral development, moral behavior, is seldom dealt with in the research literature.

In Kohlberg's model, we must accept that hypothetical dilemmas are not conducive to the study of a person's actions in a real life situation. They merely allow an intellectual exercise of the comprehended and assimilated expectations of society.

However, the question arises as to whether one can investigate the role played by moral affect in these hypothetical situations? Does it play a role in the intellectual analysis required in tests of moral reasoning, and is its role more prevalent with some subjects than with others?

In preparing for an analysis of this question, methodology became a prime consideration. Kohlberg's original work was based on oral responses to oral questions. In the past decade, several objective measures have been developed. These measures, through the use of pencil and paper tests of different formats, purport to test the moral reasoning maturity level of the subjects involved (eg. Bode and Page, Ethical Reasoning Inventory, 1978).

The availability of different methods of testing brings in several questions. How does the use of written versus oral questioning techniques influence the results? How does the requirement of written versus oral response influence the results?

These questions require that the researcher turn to an investigation of how different subjects prefer to receive information and how they prefer to respond.

Paivio (1971; 1975a, p. 270) defines a dual-coding model of information processing which presumes that there are two independent but interconnected symbolic systems. The image system, according to Paivio, works primarily analogically, and interprets scenes and creates images. The second system processes language in a primarily sequential ordering of linguistic units.

The assumption has been made, by Paivio and others, that these two systems are commonly found in all members of a population. In most, however, one system tends to predominate. It followed then that there may be a relationship between information processing system preference and the subject's level of moral reasoning and associated affect. It seemed necessary, however, since information processing system preference was involved, to also consider the format of the tests of moral reasoning and affect.

The problems can, thus, be stated as follows: 1) When a person's thinking is dominated by the verbal or image coded systems, is there a related enhancement or hindering of their ability to express more mature moral reasoning levels because of or independent of any problems they may have due to the format of the tests used? This question considers the relationship between concepts from the theories of Kohlberg and Paivio and some methodological problems not previously considered in research in these areas. 2) Does the dominance of one coding system over the other influence the use of moral affect in a

situation requiring moral reasoning? This question attempts to address the criticisms of Simpson and Hoffman in the present study. 3) Is it possible to remove the confounding influence of a testing methodology so that the results clearly reflect a relationship between code preference and moral reasoning and affect? This question suggests that the format of the specific tests must be taken into consideration. These questions have not previously been considered in studies of moral reasoning and affect.

The basic tenets of these concepts and the manner in which they arose as the questions developed are diagrammed in Illustration 1.

If the methodological concerns proved to be valid, this research would suggest that more serious consideration be given to the testing situation and methodology and to their effect on the results. If code preference and moral reasoning and affect prove to be related in some way, further research will be required to consider the nature of the relationship and its implications for future research.

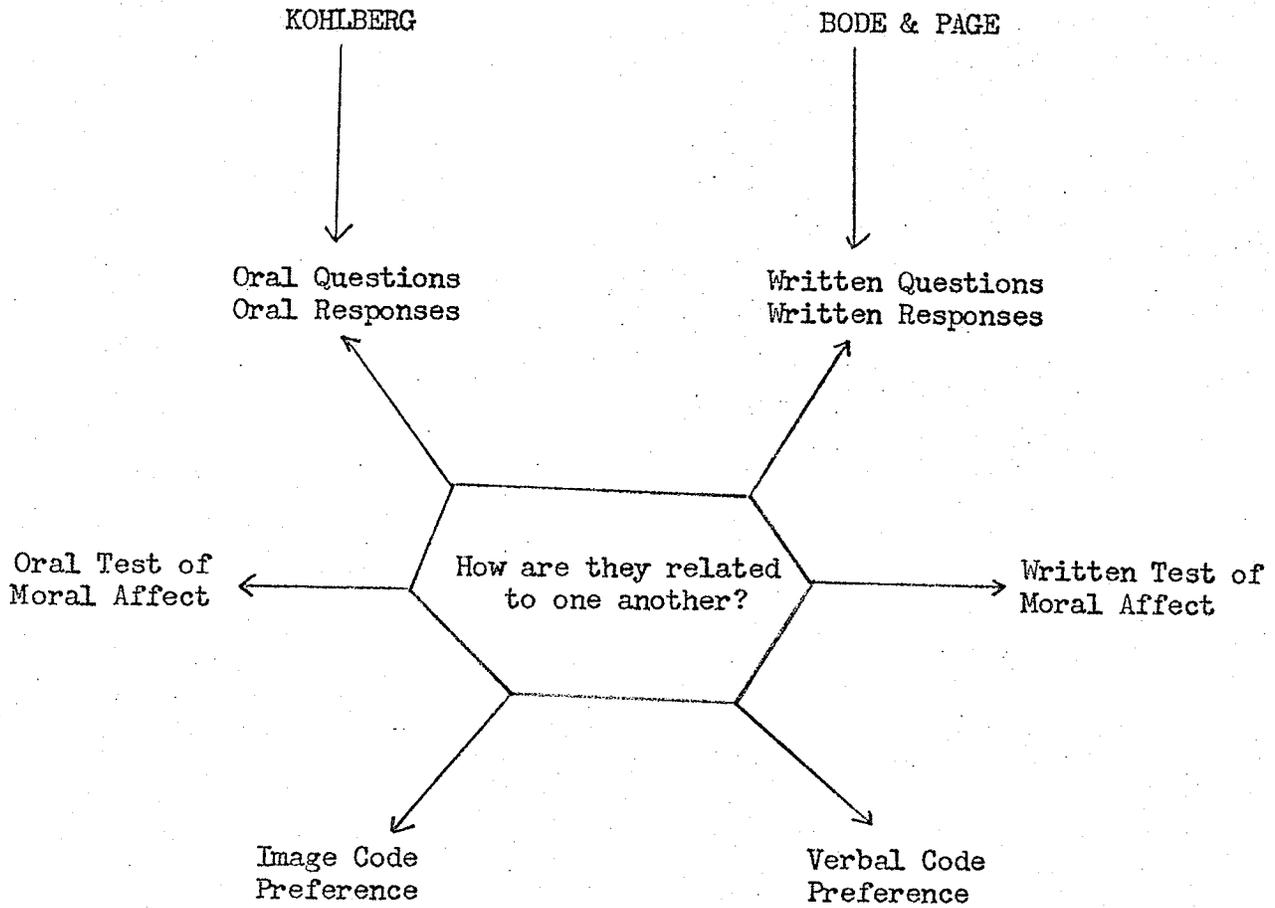
#### CONCEPTUAL AND THEORETICAL FRAMEWORK

The purpose of this section is to a) outline the nature of what has been termed the 'information processing system', to emphasize those aspects of the system which are of specific interest in this study and to review the work of those theorists who played a part in developing the concepts under consideration, b) to outline the specific elements of moral development research which will be considered in this study, and c) to outline the manner in which the hypotheses of the present study were developed.

##### The Information Processing System

The term 'information processing' refers here to the systems available within the brain for processing and retaining information. The concept, as it

ILLUSTRATION 1. Illustration of the questions arising from consideration of both the relationship of moral reasoning and affect and the methodology used to test the relationship.



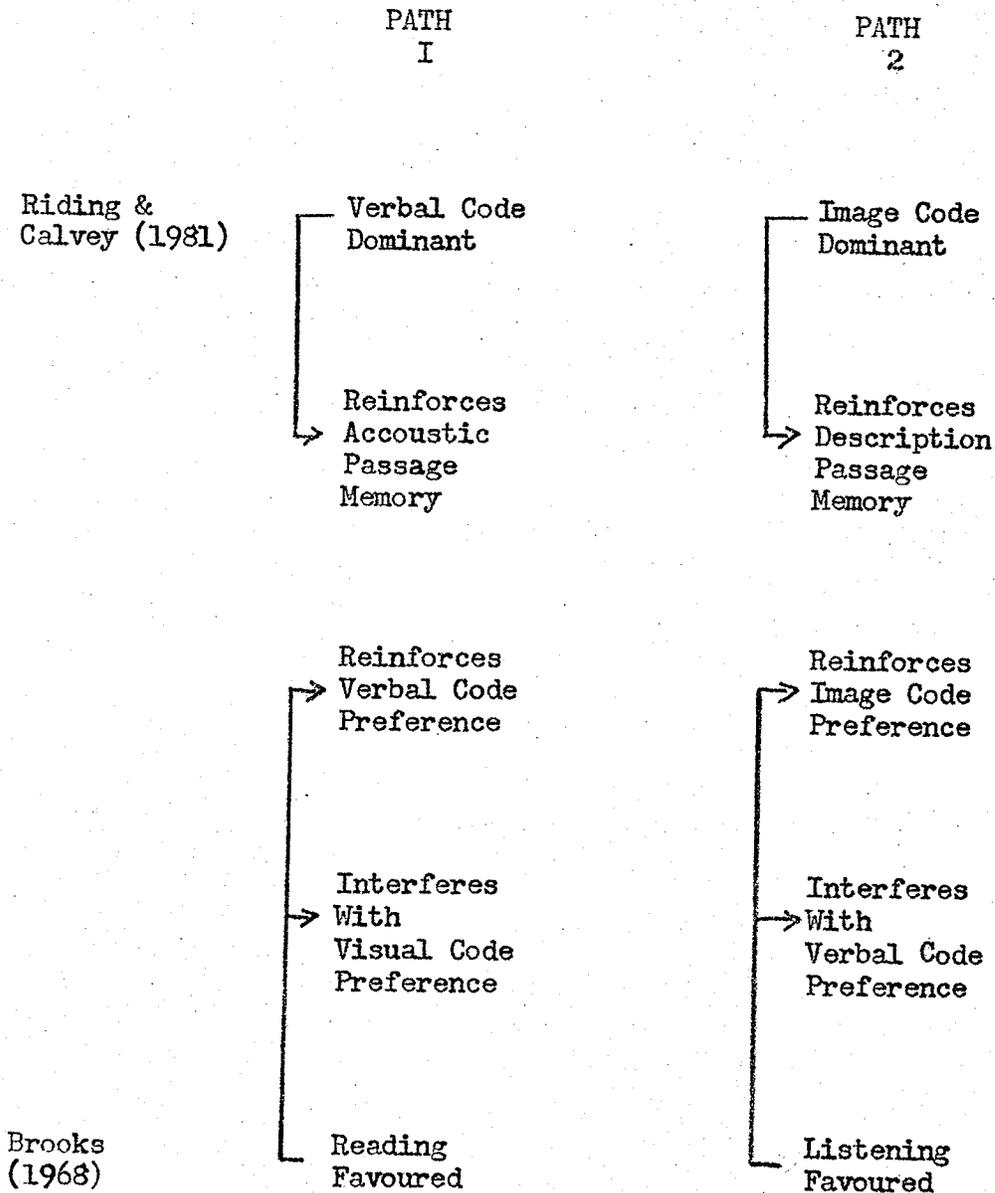
will be used here, originated with the work of Paivio (1971) and his dual-code model. Although he outlined verbal and image-coded systems distinctly, Paivio considered that both systems were present in the average person. Paivio did assume that some members of a population would depend extensively on only one code system to the functional exclusion of the other code system. Take, for example, a subject dependent upon the image code system. If forced to use the verbal code system, the subject's speed and accuracy of response would be lower than average. The opposite phenomenon would also be found. However, Paivio assumed that the majority within the population would use either code system with relative facility, their preference for one system over the other being much less exclusive. Therefore, Paivio, with his dual-code theory, saw the information processing system as a continuum. Riding and his associates expanded the concept, as discussed below.

Illustration two portrays the two extremes of the information processing system, path 1 and path 2, and some of the related concepts which will be considered in the discussion concerning the influence of the system in a testing situation. In order to explain the illustrated concepts, one must outline the specific research efforts which led to their formulation.

Since the mid-seventies, British researcher R. J. Riding has been involved in a number of studies which have attempted to build on Paivio's theory and to investigate the nature of information processing in the brain. Riding and his associates have attempted specifically to clarify how the recall of prose passage material is influenced by the subject's code preference. The earlier studies which developed from Paivio's work and upon which Riding built dealt with reported imagery and consciously evoked images.

Several of those early studies found individual differences in imagery performance and showed that it influenced learning in a variety of task

ILLUSTRATION 2. The two extremes of the information processing system and their implied relationship to preferred methods of acquiring information.



situations. The consciously evoked image was the topic of Marks' (1973) study in which he stated that subjects who reported vivid images when asked to think about a series of objects were better able to recall the content of coloured photographs than subjects who did not have clear images. Ernest and Paivio (1971) showed that subjects who did well on spatial ability tests were better able to quickly form images in response to nouns than those of lower spatial ability.

Similarly, Forisha (1975) compared subjective reports of mental imagery, as measured by questionnaire, with 'cognitive imagery', as measured by objective measures of spatial ability and mental rotation of images. Forisha found that the results of the objective measures correlated negligibly with cognitive imagery. The term 'cognitive imagery', in this case, still refers to a consciously evoked image. Richardson (1977) concluded that subjective measures of imaging ability were, at the point of his writing, unstable and unreliable as measures of the subject's mode of information processing.

The use of objective measures to study information processing systems has taken several tracks. Hollenberg (1970) used a number of paper and pencil spatial ability tests and noted that while high imagery performance children did better than low imagery performance ones on visual aspects of a concept attainment task, low imagery ability subjects were superior on the verbal aspects. The method used by Riding and Taylor (1976) was one step removed from directly questioning the subject concerning imagery and from the use of objective measures which directly test spatial ability. They used an interview technique which required subjects to respond to questions which required an imaged answer. Thus, by avoiding direct questioning concerning an evoked image, they more directly involved the subject's subconscious code preference. They found that children who could respond quickly with information that could be represented in

image form were superior on the immediate recall of concrete prose passage material. Riding has collaborated with several other researchers on a third method. Building on the testing concept used in the Riding and Taylor (1976) research, Riding (1979), Riding and Parker (1979), and Riding and Dyer (1980) have noted a correlation between high extraversion and low imagery.

The problem faced by the Riding researchers was to find a method of testing the verbal/image code preference of a subject when that subject was faced with a specific task. Riding and Taylor's (1976) study involved the use of short paragraphs followed by questions. These questions could be more specifically and more quickly answered by those subjects who were able to evoke a pictorial image of the text. Riding and Calvey (1981) expanded this technique to include questions of a verbal associative nature on the assumption that low imagery subjects were more capable in the verbal arena.

Using ten and eleven year old subjects, they concluded that their 'verbal/imagery code test appear(ed) to differentiate between individuals in terms of their performance on the immediate recall of prose materials that differ in their style with respect to the amount of visual description and semantic complexity' (Riding & Calvey, 1981, p. 64). Specifically, those subjects who were classified as imagers had higher comprehension scores on descriptive prose passages. Similarly, those classified as verbal had higher comprehension scores on verbally abstract prose passages.

What the research provided, as the present study was begun, was a method which required response to questions demanding either image or verbal associative answers. Since the responses are not consciously evoked image or verbal forms, the method involved the coding systems at an apparently intuitive level, without requiring conscious effort. The relative dominance or preference for one code over the other was measured by comparing response times to each question type.

However, when the method's applicability to the present study was considered, the prose passage recall of the specific image and verbal dominant subjects was an important factor. The results would be considered in conjunction with the research findings of Brooks (1968). Brooks reported that reading interfered with visual memory. One set of visual stimuli (the words in the book) interfered with the other set (the mental imagery which the written works evoked). Similarly, listening interferes with verbal memory because one set of auditory stimuli (the words spoken by another) would interfere with the internal monologue (which the spoken words evoked).

Thus, in a methodology such as that used by Riding and Calvey (1981) one would expect that the verbal group, those whose coding preference was verbal/sequential and who remembered accoustical passages with greater comprehension, would also be those who would prefer to read material since the visual act of reading interferes less with verbal memory, as Brooks called it. Similarly, those who preferred the image code and who tended to remember descriptive material with greater facility, would be those who would prefer to listen to material, since the auditory act of listening interferes less with visual memory.

#### Moral Reasoning and its Associated Affect

Kohlberg's theory of moral development, as it was originally formulated, drew heavy criticism. In 1977, J. C. Gibb summarized a revision of the theory to include only the first four of Kohlberg's original stages. These four stages took the form of deference to an external authority, 'me first', consideration of significant others and finally, deference to the 'golden rule' morality. The post-conventional stages were excluded specifically because the concepts upon which they were based were considered to be Western philosophical constructs and thus could not be considered valid in a cross-cultural setting. Gibb concluded that the revised four stage theory, once stripped of its contents,

did fulfill the form requirements of a stage developmental theory of the Piagetian type. (See Appendix)

The moral development theory as Kohlberg (1969) formulated it has also been criticized for not considering the influence of moral affect in associated decisions. Kohlberg has contended, however, that "the 'cognitive' definition of the moral situation directly determines the moral emotion which the situation arouses" (1976, p. 32). He has also stated that 'cognition' and 'affect' "are different aspects of, or perspectives on, the same mental events, that all mental events have both cognitive and affective aspects, and that the development of mental dispositions reflects structural changes recognizable in both cognitive and affective perspectives" (Kohlberg, 1971, p. 44).

These statements aside, little research has been done which attempted to correlate affect and moral reasoning. Czapski (1978) found that stage five subjects exhibited higher emotional arousal or 'readiness to respond' to interpersonal needs. He also reported that higher stage scores correlated positively with emotional nurturance, fewer aggressive responses, more attempts to understand the behaviour of others, a yielding to the needs of others and a lower level of self-assertion.

Eisenberg (1977) reported that emphatic moral judgment played a more significant role in prosocial moral reasoning than in Kohlberg's prohibition-oriented version. She also concluded that elementary school children's reasoning could be more exactly described as hedonistic, emphatic and stereotyped as opposed to the conceptualization found in Kohlberg's stage one 'deference to authority.' She found, also, that as children mature, they exhibit moral reasoning styles more consistent with Kohlberg's descriptions.

Gilligan (1977) used an interview method in her studies of the moral reasoning of women, and considered affect and empathy to be constant elements in their thinking. She outlined a stage progression from survival to responsibility

to nonviolence. She also emphasized that women considered the concept of care for others as opposed to rights or justice.

None of these studies specifically addressed the relationship between levels of moral reasoning maturity and associated affect.

The present study used a single measure to test both moral reasoning and its associated moral affect. These concepts were further studied in terms of their relationship to the code preferences (as defined in the research methods used by Riding and Calvey (1981)) exhibited by the subjects.

#### THE HYPOTHESIZED RELATIONSHIP

Within the midrange of the information processing continuum are those individuals who use the image or verbal code interchangeably. This facility with either system occurs in what Paivio (1971, ch. 3) defined as the referential level of information processing, at which information from one coding system becomes associated with information from the second. Toward the extreme ends of the continuum are those who depend more heavily on either the image or the verbal code. These persons tend to have difficulty integrating the two systems and work at what Paivio called the associative level of information processing. At this level, information from one coding system tends to become associated only with other information in that same system. Here ideas are linked by associations similar to those used initially at the preoperational level. One implication of this concept was that those who could not integrate the image and verbal code information functioned at a lower level cognitively than those who were able to do so. Kohlberg (1971) postulated that before one could achieve conventional morality, one must achieve concrete operational thought; and, Gibb's exclusion aside, before one could achieve post-conventional morality, one must achieve formal operations.

Because of the nature of moral judgment inventories, the abstractness of the language used at the principled stages seemed to imply a need for both the development of formal operations and a propensity for verbal abstract thinking. It seemed plausible that moral judgment scores would be lower for subjects at either extreme of the continuum than for those whose referential level facility with either system allowed them better integration of information. Because of language complexity, therefore, it seemed plausible that subjects with a verbal code preference would score somewhat higher than those with image code preference.

Similarly, it seemed plausible that subjects who preferred the image code would tend to pick up more information from the nonverbal cues of those around them. Because affect, as a nonverbal element, was first associated with image-based pre-verbal thought (in a Piagetian sense), one would expect that image code preference thinkers would be more attuned to the affect element of real life situations. Based on Czapski's (1978) study, in which principled moral thinking was found to correlate positively with positive affect, one would expect to find a positive correlation between positive affect and principled moral reasoning. In contrast, then, to the association of moral judgment and verbal coding, one would expect to find a positive correlation between positive affect and image-code preference.

A pilot study (Appendix) showed that subjects at the extremes of the information processing continuum scored significantly higher on moral reasoning than those at the middle of the continuum. A possible explanation for this finding was that those subjects whose coding preference favoured one mode of thought over the other (in the extreme) were more often faced with conceptualizations which were extremely different from their own. The ambimodal subjects, those toward the centre of the continuum, whose coding system admits

equal facility with both codes, may not often be confronted with conceptualizations which appear distinctly unfamiliar.

In a Piagetian sense, these ambimodal subjects may expend less effort accommodating to the conceptualizations of others. This relative lack of need to grapple with divergent conceptualizations would perhaps provide less incentive to develop or assimilate more complex forms of ethical reasoning. It was expected that thinkers whose code preferences were extreme would be required to grapple with divergent conceptualizations, and thus would have had more incentive to develop and assimilate the more complex forms of ethical reasoning.

Similarly, on the basis of this pilot study, Czapski's (1978) results, and the lack of significant data to the contrary, it was decided that one could expect ambimodal subjects to achieve lower affect scores than would those subjects at the extreme ends of the verbal/image coding continuum.

#### HYPOTHESES FOR THE STUDY

The study tested the following hypotheses:

- 1) Ambimodal subjects will achieve lower scores on a test of ethical reasoning than will those subjects at the extreme ends of the verbal/image (V/I) code continuum. Subjects in the verbal code preference group, however, will score higher on a test of ethical reasoning than subjects in the image code preference group.
- 2) Ambimodal subjects will achieve lower affect scores than will those subjects at the extreme ends of the V/I continuum. Subjects in the image code preference group, however, will achieve higher positive affect scores than subjects in the verbal code preference group.
- 3) Positive affect will be associated with higher moral reasoning scores.

#### ASSUMPTIONS OF THE STUDY

The first assumption of the study was that there exists a verbal/image code information processing system which can be studied consistently and which has consistent effects on an individual's learning style and memory. The concept is at present tentative and based on few research studies, the results of which are not consistent.

The second assumption of the study was that moral affect can be studied by assessing the positive affect associated by subjects with the words chosen as being most important in a subject's moral reasoning choices on an objective test of moral reasoning.

#### LIMITATIONS OF THE STUDY

The first limitation of the study is that neither the development of information processing systems nor the plausibility of code preference changes through intervention were considered in the study since it was not a longitudinal one. Thus, in regard to system development, the study did not address the order of appearance of the coding systems, the age at which they develop nor influences on the balance attained at maturity (if one exists). With regard to intervention in the process, this study did not address the permanence nor stability of the preferences nor the applicability nor advisability of experimental strategies for inducing changes in system preference.

The second limitation of the study lies in the fact that it considered moral reasoning and affect in response to hypothetical moral dilemmas as opposed to moral behaviour in response to real life situations requiring moral decisions.

The third limitation of the study involves the use of the verbal/image code test itself. The test is based on a concept which has only recently been developed, by Riding and his associates. Its validity is based on its ability

to distinguish the specific code preferences of subjects. The studies to date have failed to validate the concept and as such the methodology itself must be left open to question.

The fourth limitation of the study involves the nature of the sample. The sample for the present study included only volunteers from eight rural schools. As a result, the conclusions of the study are bound not only by the biases introduced by the use of volunteers but also by the exclusion of what one might have expected to be a more liberal and worldly urban population.

The fifth limitation of the study concerns the fact that the study is a preliminary analysis of the relationship between two concepts which have not previously been studied. No previous attempt has been made to study the relationship of a person's information processing code preference to that person's moral reasoning and moral affect use. As such, the present study is viewed as laying the groundwork for further research.

The sixth limitation of the study deals with the inconsistency with which the present author provided an opportunity for dual coding of information. The novelty of the concepts and the many facets of the problem of providing all subjects, regardless of their coding preference, with an equal opportunity to fully comprehend all information in all sections of the present study has resulted in inconsistencies in the methodology and, in the final analysis, results which cannot be credibly analyzed and interpreted. This study discusses some methodological problems pertaining to both the format of the tests used and the method of their presentation and, thus, will hopefully contribute to further, more controlled, investigations.

## CHAPTER II

### METHODOLOGY OF THE STUDY

This chapter explains how the study was conducted and describes the sample, the instruments, and the procedures which were used to collect and analyze the data.

#### THE SAMPLE OF THE STUDY

The population from which the sample for the study was taken consisted of all grade eleven students in three rural school divisions in a western Canadian province. In order to maintain anonymity, these school divisions will be designated as School Divisions I, II, and III. The sample itself consisted of volunteers from the designated population.

There were two specific reasons for choosing a rural population for the study. First, because the study concerned moral reasoning, it was felt that the more stable population in the rural communities and its generally more conservative perspective would provide a less erratic base upon which to compare information processing and moral reasoning.

Secondly, the test of moral reasoning included the stage five, principled moral reasoning. Principled moral reasoning involves an internalization of western philosophical ideals and their use in justification of one's actions. As a result, it seemed important that all members of the sample be of western extraction in order to ensure that they would have had an opportunity to develop what Buck-Morss (1975) and Braun & Baribeau (1978, p. 295) referred to as a Kantian idealist perspective and could be expected, as they mature, to develop metaethical moral reasoning (Gibb, 1979, p. 94). By avoiding the cultural variety of urban school settings, the use of a test including stage five reasoning seemed more plausible.

In total, the sample included one hundred fifty-three grade eleven students ranging in age from sixteen years three months to eighteen years with a mean of sixteen years eleven months. These subjects included 68 boys and 82 girls. Volunteers were used in the study at the request of the administration of the schools involved. It was their general opinion that volunteers would be more willing to cooperate and that those who felt their time was needed for their studies should not feel compelled to participate (if compelled, they would not cooperate wholeheartedly). According to the literature, however, a number of other factors must be considered when volunteers are used in a research study.

#### Volunteer Effect

Silverman (1977), summarizing findings of Rosenthal (1969) and others, reported that extensive literature reviews over the past two decades have come to the conclusion that "volunteers tend to be more intelligent, better educated, higher in need of approval, more sociable, more arousal seeking, less conventional, less authoritarian, more often first born, and younger than non-volunteers" (p. 89). He also concluded that volunteers seem to be more responsive to the experimenter's purpose (p. 93).

Joe et al. (1977) reported that highly conservative subjects were less willing to volunteer for experiments that required more openness. They appear to limit their range of experiences in order to retain control over situation complexity and novelty and over personal feelings.

Cooperman (1980) found that field-independent subjects (those who are on the verbal end of the information processing continuum (Riding & Dyer, 1980)) are more intellectually curious, less intimidated by experience and tend to volunteer more often than field-dependent subjects. Rush, et al. (1978)

differentiating more closely found unpaid volunteers to be more field-dependent than paid volunteers. He also concluded that unpaid volunteers tended to be more interpersonal in their orientation toward others than were paid volunteers.

In contrast to this last comment, Dixon (1978) found volunteers were more hostile to experimentation than were either required or paid groups. Dixon used an attitude to experimentation questionnaire to test this hostility. The nature of the hostility was not discussed in detail and could perhaps be a slanted view of what Farr (1978) proposed, that "the very term 'volunteer' suggests a certain measure of autonomy" (p. 305).

There are very few distinctions made on sex differences in volunteers. Watson (1981) was one of the few. He stated that volunteers among women tended to be a more homogeneous group than is the general female population.

The present study was carried out with volunteers from seven rural, essentially farming, communities in a western Canadian province. The communities tend to support the Conservative Party and tend to support numerous churches in each community. The teenagers tend to wear their hair longer than is the fashion and to dress after the manner of a half decade ago as compared to comparable urban fashion.

Based on these factors, one would assume that the volunteers in the present study would reflect a more liberal element in their communities, based on Joe, et al. (1977), and that their moral reasoning scores would tend to reflect more of an interpersonal and field-independent/autonomous perspective than that of the general population (Cooperman, 1980, and Farr, 1978).

In analyzing the code preference data, the distribution of female scores is less variable than those of the males. The mean (M) scores were 0.70 and 0.67 for the males and females respectively. Standard deviations (SD) were 0.22 and 0.17 respectively. This seems consistent with Watson's (1981) claim

that females are a more homogeneous group. (See illustration three.)

The subjects were very curious, showing no indication of negative attitudes, in spite of lengthy administration times (1-1½ hours for the moral reasoning test) and the obvious disruption of their school day. They were interested in the nature of the experiment and may have been convinced to join the experiment because of the experimenter's commitment to share the results with them.

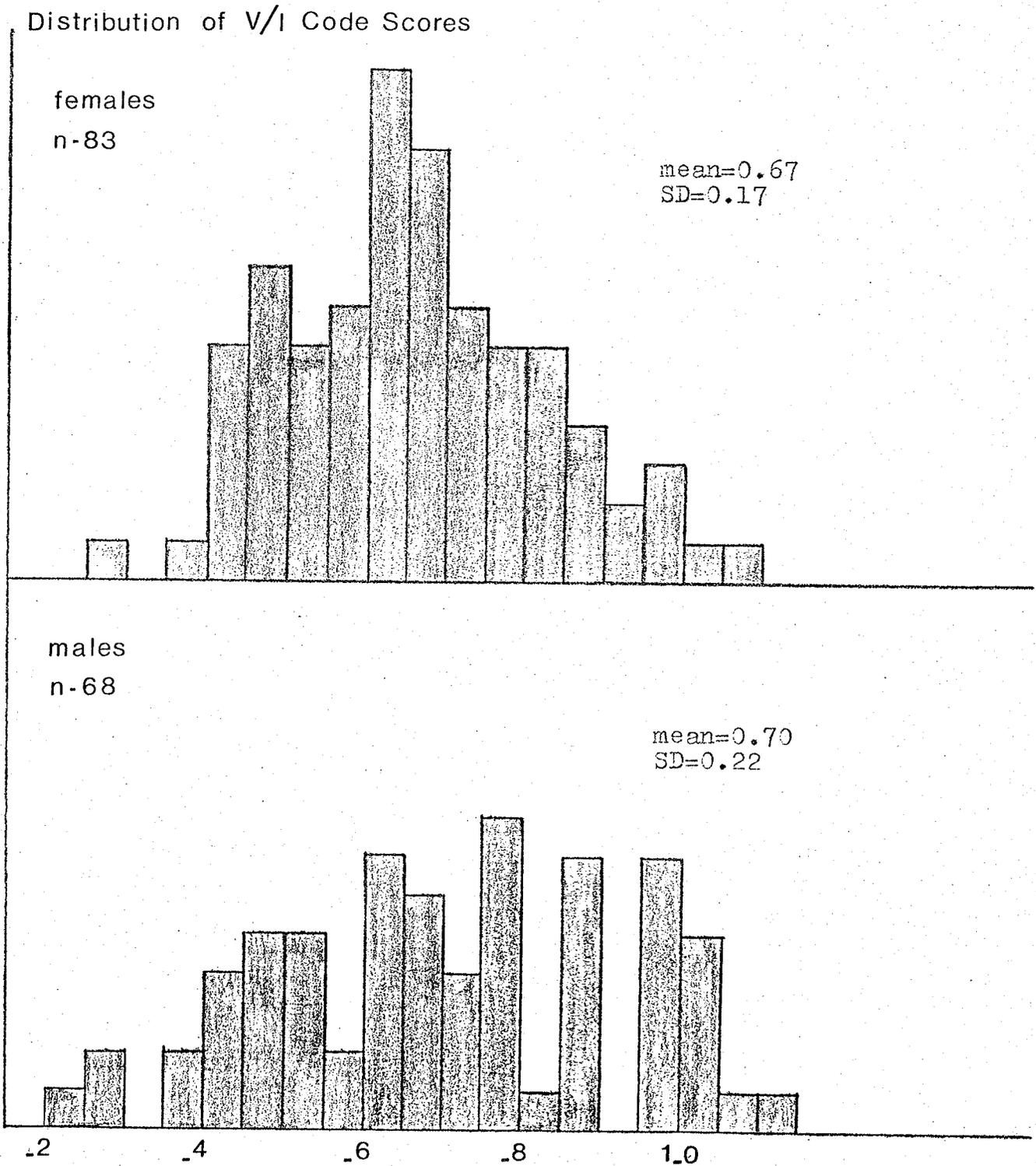
These volunteers did seem committed to the project from beginning to end. Only two subjects dropped out during the research period; one due to illness and a second when his father was transferred to another job.

Of the total number of volunteers, one hundred forty-five were included in the data analysis. Along with the two who dropped out, six were excluded due to absence during some of the test administration sessions.

Of the one hundred forty-five subjects included in the information processing section of the study, a second sample of sixty subjects were chosen for inclusion in the moral reasoning and affect segment of the study. These sixty were chosen for placement in one of three specific groups. Twenty (10 girls and 10 boys) were randomly chosen from those whose scores were extreme image code preference (beyond one S.D. of the mean). Twenty were similarly chosen from the extreme verbal code preference group. The third group of twenty, the ambimodal group, were randomly chosen from those whose scores fell within one S.D. of the mean.

The sample for the moral reasoning/affect section of the study, thus, consisted of three distinct groups of twenty; classified as image, ambimodal, and verbal groups. Each groups consisted of ten boys and ten girls. The mean age of the subjects in this sample was sixteen years ten months for the girls and seventeen years for the boys.

ILLUSTRATION 3. Distribution of original volunteer group by their verbal/  
image code test score.



## THE INSTRUMENTS

### Verbal/Imagery Code Test

The verbal/image (V/I) code test was constructed for use in distributing the subjects along a continuum according to their relative preference for either the verbal code or image code as defined by Riding and Calvey (1981). Due to the fact that Riding and Calvey (1981) were testing pre-adolescents the specific test which they used was felt to be too juvenile for use with sixteen to eighteen year old adolescents. It was necessary, therefore, to construct an instrument more suited to the subjects of the present study.

The V/I code test created for use in this study was constructed by taking a passage from an unpublished article which described the experiences of a hitchhiker in Wales. The selection used contained both descriptive passages (describing the countryside and its inhabitants) and more abstract verbal passages (including town and highway names). The selection was divided into twenty passages which ranged in length from thirty-six to seventy-four words. A question was devised for each passage which could not be answered directly from the information in the passage. Half of the questions were considered to be answerable from images generated from the information in the passages, while the rest were of a verbal associative type and dealt with semantic aspects or concepts which were in the passage and which were therefore likely to have been evoked as verbal associates by the passage contents (see illustration 4). Question type was randomly distributed among passages.

### Prose Recall Test

As a supplement to the main purpose of the study, and in an attempt to expand on the work done by Riding and Calvey (1981), the subjects, having completed the V/I code test, were asked to complete the Prose Recall Test

ILLUSTRATION 4. Sample prose passages and subsequent questions. Examples of image-oriented and verbal-oriented questions respectively.

11. QUESTION: What colour are the waitress's eyes?

My host merely raised his voice, adopted a slightly more haughty air, and stated that the only good reason for anyone to go to South Wales would be to see how a country could be made ruinous and ugly by careless industrialization.

12. QUESTION: Who is the man looking at?

I kept my comments low-key and changed the subject (I was in no position to tell either of them they were wrong). Our coffee break concluded without event. The road to Evesham passes between orchards on both sides. When they left me on the main street of town, I wandered under a tall avenue of trees filling my face with plums that were just ripe, still with a twinge of sour near the stone.

used by Riding & Calvey in their 1981 study. The test was used in its original form since the content was generally unfamiliar to the subjects and the use of the same material was expected to provide a closer comparison with Riding & Calvey's research.

The Prose Recall Test consisted of four prose passages which, according to Riding & Calvey, form a rough continuum from a high degree of imagery at one extreme to a high degree of accoustic and semantic complexity on the other. As described by Riding & Calvey (1981, p. 61) "The first passage was highly visually descriptive with many similes and metaphors, the second was moderately visual but without similes and metaphors, the third was moderately semantic and accoustic being less visual than the first two and having more names, and the fourth was highly semantic and accoustic having many accoustically complex and unfamiliar names and few visual details." The recall tests were comprised of fifteen questions each and followed immediately from their respective passages. (See illustration 5.)

#### Ethical Reasoning Inventory

The selection of a test of moral reasoning was guided by a number of factors. In the first place, it was felt that the traditional interview format as used by Kohlberg would require too much administration time to be useful in the present study. Secondly, the use of an interview format requires that the results be interpreted and classified by an experienced experimenter and this again required time not easily available. Thirdly, the influence of the interviewer in each separate interview was out of the control of the researcher and as such would become a source of bias in the results.

For these reasons, the researcher chose to use an objective measure of moral reasoning. On the basis of a review of the literature it appeared that

ILLUSTRATION 5. Sample from Prose Recall Test by Riding & Calvey (1981) -  
Passage 1 and associated Recall Test Questions.

Prose Passages and Recall Test Questions.

Passage 1, Complex imagery.

The reindeer were the size of Shetland ponies, and their hair was as white as snowflakes. Their velvety, branching horns shone like brass, or like something on fire when the sunrise caught them. Their bright harness was of scarlet leather, as red as holly berries, and covered with bells. On the sledge, which moved like a swift dark shadow across the white snow, driving the deer, sat a fat little dwarf, dressed in polar bear's fur. He wore a hood that was as red as a robin's breast, with a long tassel hanging down from the point. His huge beard was like a white woollen blanket, and served him instead of a rug. Behind him, on an elevated seat, as though on a throne, in the middle of the sledge, sat a very different personage - a great lady, like a queen, taller than any woman that Edmund had ever seen. She was dressed in swan-white fur, and held a long golden staff in her right hand. She wore a crown on her head, and her face was white - not merely pale, but white like snow or paper or icing-sugar, except for her cherry-red mouth. It was a beautiful face in other respects, but as proud and cold as the moon on a frosty night.

Adapted from C. S. Lewis, 'The Lion, the Witch and the Wardrobe'.

Recall Test Questions.

- (1) What were the reindeer's horns like?
- (2) What colour was their harness?
- (3) How did the sledge move across the snow?
- (4) Who was driving the sledge?
- (5) What were his clothes made of?
- (6) What was hanging down from the point of his hood?
- (7) Did he have a beard?
- (8) Who was behind him on the sledge?
- (9) Was she standing up in the sledge?
- (10) What was the boy's name?
- (11) What was the lady dressed in?
- (12) What was she holding in her hand?
- (13) What did she wear on her head?
- (14) What colour was her face?
- (15) What was the look on her face compared to?

of the objective measures of moral reasoning in use, the Ethical Reasoning Inventory (ERI) published by R. Page and J. Bode (1978) was more closely based on the original Moral Judgment Inventory (MJI) developed by L. Kohlberg, than were other measures. One study, Page and Bode (1980), compared the ERI with other available measures and reported that the ERI showed a higher correlation with the MJI and demonstrated a higher internal consistency than the other objective measures tested. On the basis of this information, permission was obtained for the use of the ERI in the present study.

Briefly, the ERI uses dilemmas and questions from the original MJI and instead of requiring oral responses to these questions it provides a number of possible responses to each question. These responses represent different forms of moral reasoning of the Kohlbergian type. The subject is requested to choose the response which is most like his/her way of thinking in that situation and to mark the answer sheet accordingly.

Illustration 6 is a sample page taken from the ERI.

#### Affect Word List

One of the intentions of the present study was to assess the level of positive affect associated with the level of moral reasoning of subjects in the study. With this in mind, the directions given subjects as they completed the ERI were revised to include the following instructions. Subjects were asked, after choosing the response most like their way of thinking, to review that chosen response and to find the one word in that response which most helped them to decide that that response was most like their way of thinking.

Once all subjects had completed the ERI, the sum total of all the words chosen by the subjects (26 words x 60 subjects) were sorted and randomly reordered. These 314 words were placed in an instrument titled the Affect-

ILLUSTRATION 6. Page 39 of the Ethical Reasoning Inventory (Bode & Page, 1978) showing a question (#4) and the six alternative responses from which the subject is to choose that most like his/her way of thinking in response to the question.

39

39

4. Why should a promise be kept?

Answer: "A promise should be kept because..."

Any human relationship, to be a sensitive loving relationship, depends on mutual trust, and human relationships are essential to meaningful existence.

The reassessment of internal balance must not exceed the usefulness of the externality of the situation.

If you don't, then the other person won't keep theirs if they make one to you.

Trusting others is hard to come by. If someone gives a final word, like a promise, it is sacred. A promise is a commitment which no person has the right to break; it's a part of yourself you're giving, you should have the integrity and character to carry it out. If he expects society and others to trust him, he must live up to what he says.

It's a betrayal of trust. One expects and trusts another to keep a promise and it always hurts when one's trust is shown to be faulty.

Because if you keep the promise you won't get in trouble:

Turn to page 40.

Word List. Each word was placed in association with a rating scale which included from left to right a negative sign, seven dashes and a positive sign; all bracketed. Subjects were required to mark the rating scale indicating how positive a feeling the word evoked in them (see Illustration 7).

## RELIABILITY & VALIDITY OF THE INSTRUMENTS

### Verbal/Image Code Test

The V/I code test used in this study is based on the form of the test used by Riding & Calvey (1981). To date no estimates of reliability or validity of the Riding & Calvey measure have been carried out. With regard to the version used in the present study, based on the opinions of teachers (taken randomly, as to their opinion on which students tended to follow specific patterns of learning) and in some cases the opinions of the subjects themselves, the V/I Code Test seems to distinguish successfully between extremely image and verbal dominant subjects. These are, of course, opinions and require further research and corroboration.

### Prose Recall Test

This test, again used by Riding & Calvey (1981), awaits further research regarding its reliability and validity.

### Ethical Reasoning Inventory

A number of studies have been done which have reported on the reliability and validity of this measure. Its internal consistency has been analyzed and reported (by Bode & Page in Kuhnicker, Meuthowski and Erickson; 1980) using item by item correlation and resulting in Cronback Alpha scores of .69 to .97. Temporal stability was studied on test-retest reliability for several time

ILLUSTRATION 7. Affect Word List sample including words and their associated rating scale.

NAME \_\_\_\_\_

AFFECT - WORD LIST

Directions - Look at each word in turn and mark its scale indicating how positive a feeling it leaves you with. Work quickly - what you mark should be your first impression.

---

example	(- _ _ _ _ _ +)	defend	(- _ _ _ _ _)
fair	(- _ _ _ _ _ +)	pay	(- _ _ _ _ _)
jail	(- _ _ _ _ _ +)	faulty	(- _ _ _ _ _)
trust	(- _ _ _ _ _ +)	trustful	(- _ _ _ _ _)
astray	(- _ _ _ _ _ +)	require	(- _ _ _ _ _)
explain	(- _ _ _ _ _ +)	family	(- _ _ _ _ _)
fulfill	(- _ _ _ _ _ +)	devine	(- _ _ _ _ _)
spark	(- _ _ _ _ _ +)	self-guidance	
told	(- _ _ _ _ _ +)	go	
serious	(- _ _ _ _ _)		
essential	(- _ _ _ _ _)		
share			

periods resulting in Pearson product-moment correlations ranging from .69 to .80 (Bode & Page in Kuhnicker, Meuthowski and Erickson; 1980). The overall correlation between ERI scores and MJI scores on several study samples used by Bode and Page was  $r = 0.56$  (Bode & Page in Kuhnicker, Meuthowski and Erickson, 1980). In a further study (Bode & Page, 1979b) ERI and MJI scores correlated at  $r = 0.39$  ( $p < .001$ ). In the same report, Bode and Page state that the ERI can be used successfully with subjects as young as fourteen years. Although research has shown that it is possible for subjects to fake a lower score, subjects have not been able to fake a higher score (Bode & Page, 1979a).

#### Affect-Word List

This measure, created for the purposes of this study, has not been tested as to its reliability and validity. With regard to validity, the only comment which could be reasonably made would be that the directions speak directly to the level of positive affect associated with the words and those words were taken directly from the moral reasoning responses chosen by the subjects.

#### Summary

To maximize the reliability and content validity of the new measures, the V/I Code Test and the Affect-Word List, their construction was analyzed on the basis of the Pilot Study experience and any changes which seemed appropriate were made. The measures were also reviewed by several teachers and graduate students who had previously been administered the tests and changes were made on their recommendation.

With regard to the Prose Recall Test, the scoring system was changed on the basis of the pilot study results. These changes are discussed in the administration and data collection report and can be found in detail in the appendices.

Changes to the administration of all four tests were made in view of the information processing preferences of the subjects, their influence on the results and the expected influence of methodology on the comprehension of the extreme code preference subjects. These methodological precautions are also discussed under the administration and data collection section.

#### ADMINISTRATION AND DATA COLLECTION

##### Verbal/Image Code Test

In preparation for the administration of the V/I Code Test, the passages and the accompanying questions were taped. Each question was followed by a five second period of silence. Each subject was interviewed individually. Subjects were given examples of the passage format and of both question types, and were told that the answers to the questions were not to be found in the passages themselves. No instructions were given to answer quickly.

The code test tape was then played and the questions and the subject's responses were taped using a second tape deck. The tape decks were controlled using remote on/off switches to allow the experimenter to remain as inconspicuous as possible. If a subject required more than five seconds to respond to a question, for example, the experimenter was able to stop the code test tape remotely so as not to interfere with the subject's train of thought. Administration took approximately 13 minutes.

The administration of the V/I code test involved the subject's listening to the tape and then responding orally to the questions. In consideration of Brooks' (1968) research, the listening act would favour image-code dominant subjects. This would tend to improve their comprehension over that of the verbal subjects and as such their speed of response as well. This expected

benefit was in the researcher's view, in part at least, compensated for by the method of data analysis used. Because each subject's total time taken answering one type of question was divided by the total time taken answering the second, the ratio would tend to neutralize any time factor due to a favourable presentation mode; whereas, the time factors related to the subject's preferred to non-preferred code would not be affected.

#### Prose Recall Test

The Prose Passage Recall Test was group administered to all participants in each school approximately two weeks after subjects had completed the V/I Code Test. In order to assure that administration conditions were similar for all groups, the four prose passages were taped along with their accompanying questions. Each question was followed by a ten second period of silence before the next question was read.

In order to assure that each subject had equal opportunity to encode the information in the passages, subjects were allowed to read along as each passage was read on the tape. At the end of the passage, subjects were instructed to turn the written passage face down before answering the taped questions. As the subjects answered the questions the researcher replaced the just completed passage with the one to follow. Administration took approximately twenty minutes.

The oral questions would again favour the image-oriented subjects but this benefit would to some extent be countered by the fact that subjects were required to write their responses on the answer sheet - this act favouring the verbal-oriented subjects.

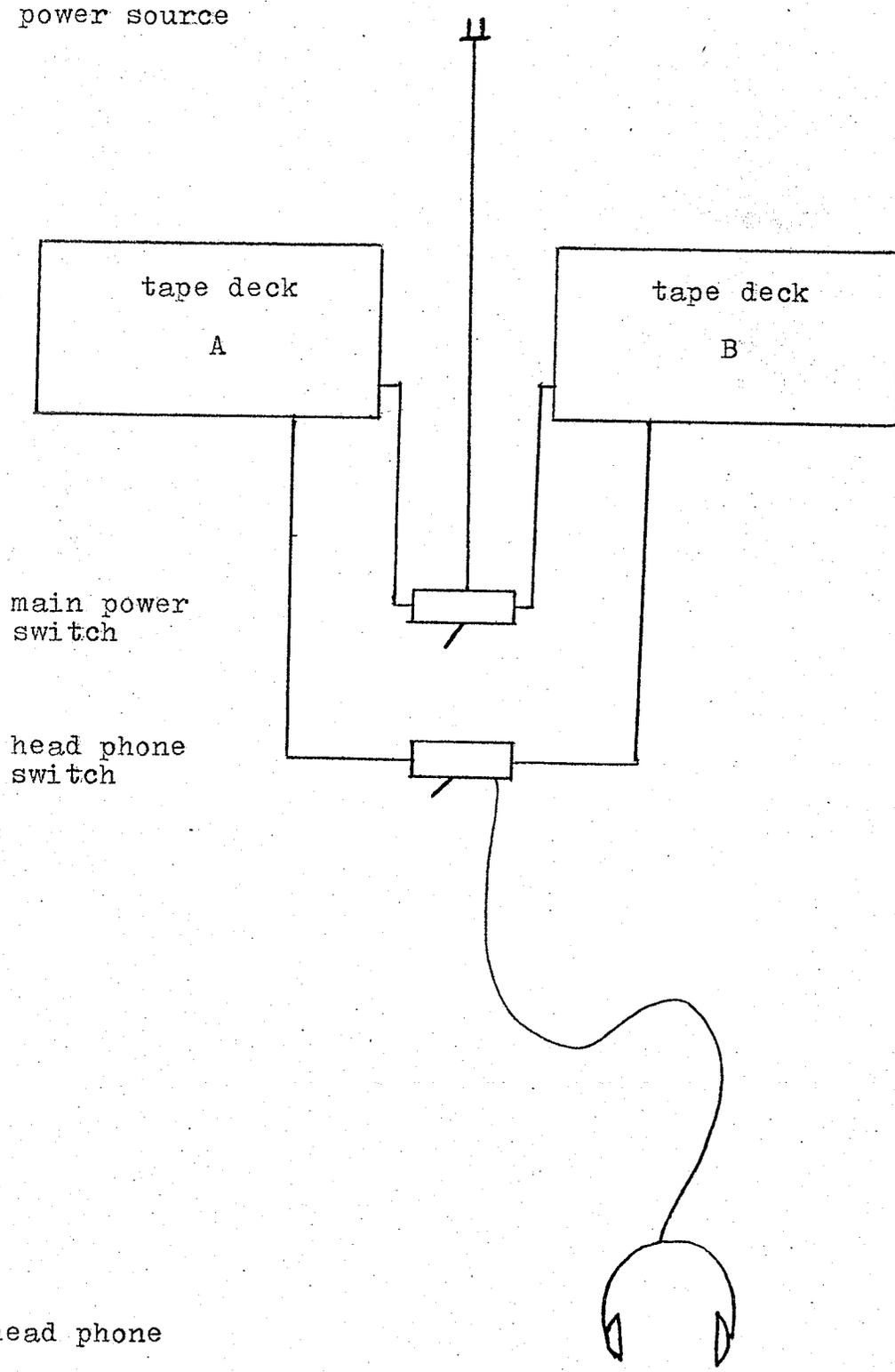
### Ethical Reasoning Inventory

The ERI is intended to be a self-administered test with no assistance from the experimenter other than in explaining the directions. The test, however, requires that the subject read text and respond on the basis of his/her comprehension of the text. On the basis of a split-half experimenter-read versus subject-read analysis done with the pilot study, it appeared that although, in general, comprehension improved when the experimenter read the text, the improvement was markedly greater for the image-oriented subjects. In other words, as it is usually administered, it would appear that the administration format benefits the verbal-dominant group and artificially improved their moral reasoning score as opposed to that of the image-oriented subjects.

In order to equalize opportunity for encoding the ERI information, it was decided that subjects should be read the entire ERI while they read along in the booklet itself. This proved something of an obstacle since each subject follows a different path through the forced choice sections of the test - each subject's choices could be different. The experimenter-read option seemed inappropriate since it would introduce an experimenter bias and would entail an excessive amount of administration time.

The solution as illustrated in Illustration 8, was to use a dual taping system. The two tape decks were powered in tandem through a master on/off switch. The entire ERI was taped into both decks at once. The experimenter monitored the counters on the decks to assure that the tapes were running at the same speed. Whenever a forced choice occurred, tape deck B was halted while the first set of options were taped onto tape A. Tape A was then halted, tape B run, and the second set of options were taped onto tape B. When both sets of options were taped the counters were equalized by running

ILLUSTRATION 8. Dual tape deck system used in administration of the ERI.



whichever tape had been left behind and the dual taping was ready to begin.

Whenever the subject was expected to mark his/her response, a bell was rung and taped on both tapes. The bells were intended to remind the subject to turn off the decks so that the decks would not continue before the subject was ready.

In preparation for administration, one more system had to be added to the mechanism. In order to assure that the subject would hear only those sections of the ERI which he/she had chosen, a head phone system was used. Head phone jacks led from each tape deck into a dual switchbox. From the box a single head phone wire led to the phones worn by the subject. The head phone switch positions were marked 'one' and 'two'. Thus, if the subject had chosen the first option in a forced choice option question, he was instructed to switch the head phone to 'one'. He would then hear the appropriate response set for the option chosen. When no forced choice occurred, the subject could listen to either tape deck since both contained the same information.

In practice, the system worked well, with only one subject of sixty requiring assistance in resetting the tapes. Once the tapes were reset in dual, the subject continued without problems.

This system assured that each subject heard the same read-interpretation of the ERI. Two such systems were set up, allowing two subjects to complete the ERI within each  $1\frac{1}{2}$  hour slot. Each pair of subjects were given directions together and then each completed the ERI at their own pace and without interruption from either the experimenter or the other subject.

#### Affect-Word List

Because of the nature of this test, part of the administration process of

the test has already been outlined in the discussion of how the instrument itself was created. However, once the instrument was ready for its final administration to the subjects, it was group administered to all participants from each school. Subjects were instructed to work quickly to ensure that their first impression was represented in the mark made on the rating scale. The administration took, on average, ten minutes.

The administration of this test included one of the major flaws in the present study. By requiring that subjects read the words themselves rather than having a taped reading of the words play while the subjects watched the text and marked the scale, the test favours the verbal dominant subjects over the image dominant. Because of this flaw, the results of this test remain somewhat suspect.

#### TABULATION OF THE DATA

##### Verbal/Image Code Test

The questions and subject responses to them were taped onto ninety minute tapes. Each subject's responses were preceded by a spoken description to identify the subject.

The tapes were analyzed by feeding the electrical imprint of the voices, which was registered on the tapes, through the tape deck into a Hewlett Packard 7402A two channel strip chart recorder. The chart speed was set at five millimeters per second. This speed provided adequate measurability without waste of strip chart paper. The right strip was used and the voltage was calibrated at twenty milli-volts per division. Thus, time and voltage were the two divisions. Basal vibration rate (the width of the vibration appearing on the chart paper when the tape was 'silent') was controlled by using the volume

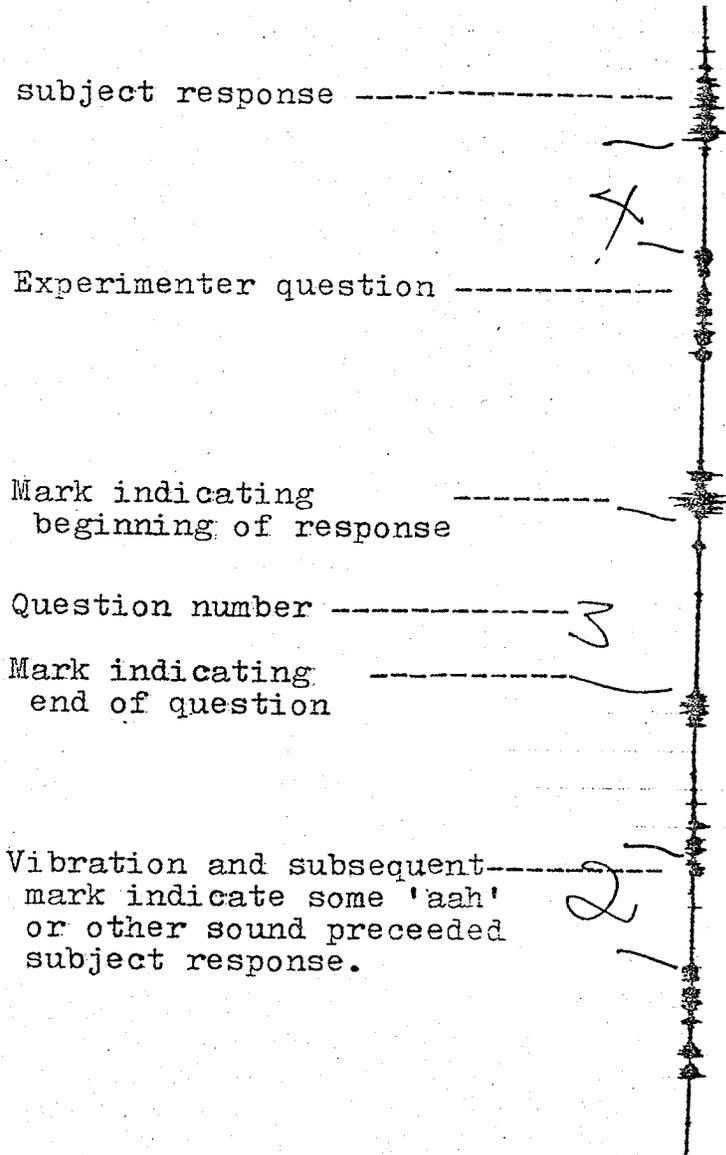
control. Head phones allowed the researcher to monitor the voices as he watched the tracking vibrations on the chart. As can be seen in Illustration 9, the researcher marked and numbered the question end and response beginning in each case while listening to the tape. This was necessary due to extraneous noises, clicks and shuffles which would have been indistinguishable from data if viewed without the accompanying sound.

Having set the basal vibration to a width of approximately one millimeter, the researcher decided upon a convention of gauging the end of questions as being that point at which the vibration width dropped to less than two millimeters. The same convention was used to gauge the beginning of answers. 'Aah,' 'hum' or other such vocalizations were not considered as the beginning of the response. The response was assumed to begin with the first articulate word.

Using the graphed voices, it was then possible to measure the response latency with a millimeter ruler. Each subject's response times were recorded on data sheets (see pilot appendix). The total number of seconds required for all ten verbal questions was averaged and then divided by the totalled and averaged number of seconds required for all ten image questions. In cases where data points were invalid or missing, the total time taken, excluding the missing data, was averaged based on the number of valid data points. This ratio became the subject's V/I Code Score (or VIRATIO).

This VIRATIO would equal 1.00 if their skill in using the image and verbal codes was equal, and if the test provided questions of equal difficulty.

ILLUSTRATION 9. Diagram of strip-chart record of Verbal/Image Code Test data (unused left chart excluded).



### Prose Recall Test

Once the subjects had completed their responses to each set of fifteen questions, the responses were ready for correction. During the pilot study, it became apparent that disputes could arise as to what constituted a correct answer to a prose passage question. After analyzing the questions and the key words which could constitute appropriate responses, it seemed inappropriate to score one point per question since the correct response ranged from five nouns, adjectives or simile pairs, to one single name or noun. As a result, the total number of possible correct responses was used independently of the question which had evoked the response. The total score possible on each of the prose passages thus became: 35 for the highly descriptive passage, 24 for the moderately descriptive, 24 for the moderately semantic passage, and 22 for the highly semantic passages. See the appendix for specific details on the responses considered correct.

In preparing the data for analysis, each subject's passage scores were converted into percentage of correct responses. This allowed a more readable analysis of the data for comparison, one passage to another.

### Ethical Reasoning Inventory

The subject was requested to choose the one response in each group that was most similar to his/her reasoning in that situation. Using the scoring key provided by Bode & Page, the subject's responses to the questions were coded according to the stage which each chosen response represented and the scores (which ranged from 1 to 5) were totalled and a mean score calculated. The subject's ERI score (ERIAVE) was therefore the mean of their totalled stage scores on the 26 dilemma question responses chosen.

### Affect-Word List

The subjects were asked to mark the rating scale associated with each word. The researcher chose to designate a value ranging from -3 through 0 to +3 for each of the seven dashes in the rating scale. The subject's mark placement on each individual scale was therefore indicative, to the researcher, of a numerical value. For example, the first dash on the left was given a -3, the fourth, 0, the sixth +2, and the seventh +3. The values which each subject gave to each word were sorted and tabulated. The values given each word were totalled giving values for individual words which ranged from -146 for the word 'kill' to +153 for the word 'love' out of an extreme score possible ranging from (-3 x 60 subjects) or -180 to (+3 x 60 subjects) or +180.

In order to calculate an individual's affect score, the words chosen by the individual were replaced by their numerical value and the 26 values for that individual were totalled. This total became the subject's affect score (or the AFFSUM).

### CHAPTER III

#### RESULTS & DISCUSSION OF THE STUDY

This chapter has four purposes. First, a biographical profile of the subjects is presented. The second section provides an analysis of the verbal/image code test scores; upon which the subject selection for the main study was based. Results of the prose recall, ancillary study are presented here as well. Third, the results of the analysis of the relationship between verbal/image code preference and moral reasoning and associated affect are presented. The final section includes an analysis of the methodological data and the problems which arose during execution of the study. Each section of the chapter also includes a discussion both of the results and of how they influence other aspects of the study.

#### BIOGRAPHICAL PROFILE OF THE SUBJECTS

Table 1 presents a profile of the subjects as a function of various biographical characteristics.

(1) School and School Division. The number of subjects was not evenly distributed among the three rural school divisions. Near one half the subjects attended schools in school division III with the other half being split between school divisions I and II.

(2) Age. The age range of the subjects, from 16 years 3 months (195 months) to 18 years (216 months) can be divided into those who have progressed normally through school, at ages 195 mo. to 207 mo., and those who have repeated at least part of a year at one time or another, at ages 208 mo. to 216 mo.

The first group represents 92.3% of the sample, the second group the remaining 7.7%

TABLE 1

Biographical Profile of Subjects

1. School & School Division

School Division I

School A 14 (9.7%)

School B 25 (17.2%)

School Division II

School C 28 (19.3%)

School D 10 (6.9%)

School E 2 (1.4%)

School Division III

School F 32 (22.1%)

School G 34 (23.4%)

2. Age (as of May 1, 1983)

195 mo. to 198 mo. 20 (13.7%)

199 mo. to 202 mo. 48 (33.1%)

203 mo. to 206 mo. 55 (37.3%)

207 mo. 12 (8.3%)

208 mo. to 210 mo. 6 (4.2%)

211 mo. to 216 mo. 5 (3.5%)

3. Sex

Males 66 (45.5%)

Females 79 (54.5%)

4. Class

academic stream 97 (66.9%)

general stream 48 (33.1%)

(3) Sex. The number of members of each sex who volunteered for the study was relatively even with females in the majority 54.5% to 45.5%.

(4) Class. Consistent with Silverman's (1977) summary of the nature of volunteers the present sample has a much larger portion of those who have chosen the more difficult, academic stream. The percentages, with the academic at 66.9% would be reversed in the general student population.

#### VERBAL/IMAGE CODE PREFERENCE AND RELATED PROSE RECALL.

##### a. Distribution of verbal/image code test scores

As a preliminary to representing the subjects on a verbal-imagery preference continuum, the response times were compared and their relationship to overall recall performance was first considered.

For each subject, mean response times for the imagery and verbal questions were determined. The overall means were: imagery 3.08 sec. (SD = 1.93) and verbal 1.95 sec. (SD = 1.07); indicating that the imagery questions proved to be, on average, more difficult than the verbal questions.

A correlation of subject's mean image and verbal scores revealed a significant relationship ( $r = 0.85$ ,  $P < 0.001$ ), indicating that the subjects who were fast at answering one type of question were also relatively quick at responding to the other type.

As stated previously, in order to obtain a relative measure of verbal versus image preference, the ratio of the mean response times was taken for each subject. This verbal/image code ratio or VIRATIO for a subject was thus defined as the mean verbal response time divided by the mean imagery response time. The ratio gave an indication of the position of a subject on the assumed verbal/image continuum. Those subjects with a high ratio were toward the imagery end while a low ratio indicated placement toward the verbal end. For the subjects tested, the ratio ranged from 0.22 to 1.13 ( $M=0.68$ ,  $SD=0.189$ ).

Table two provides a profile of the VIRATIO scores as a function of biographical characteristics. While boys had a slightly higher mean ratio than girls ( $M=0.70$ ,  $SD=0.22$  and  $M=0.67$ ,  $SD=0.17$ , respectively), a one way analysis of variance showed the difference to be nonsignificant.

Subjects were grouped according to age using the following groups: 196 mo. to 200 mo., 44 subjects; 201 mo. to 204 mo., 46 subjects; and 205 mo. to 216 mo., 55 subjects (subjects were split according to month by month age groups in an attempt to make similar sized groups). Having set a significance level at  $p = 0.01$ , the age factor was not significant ( $F = 3.45$   $p < 0.03$ ). The age factor does, however, indicate a steady increase in an image ability with age; VIRATIO scores ranging from 0.63 ( $SD = 0.168$ ) for the youngest group, 0.66 ( $SD = 0.190$ ) for the mid group and 0.73 ( $SD = 0.196$ ) for the eldest group.

Within the sample a predominance of academic students as opposed to general stream students (97 to 48 subjects respectively) had no significant effect on VIRATIO ( $F = 1.12$ ,  $p < 0.29$ ) although academic stream students tended to be slightly more image oriented (VIRATIO mean score of 0.69 ( $SD = 0.20$ ) for academic and 0.65 ( $SD = 0.17$ ) for general).

Similarly, VIRATIO did not vary as a function of either the school or the community to which subjects belonged ( $F = 0.78$ ,  $p < 0.585$ ).

As an aside, there are several points with regard to these results which are worth noting. First, with regard to the nonsignificant difference mean VIRATIO score between the sexes. This finding is not consistent with either Riding and Calvey's (1981) findings nor with White, et al (1977) although the White, et al, research is self-reported imagery and thus not comparable with the present study (Forisha, 1975). Both Riding and Calvey and White, et al, had reported significantly higher imagery among girls. Table 2 provides

TABLE 2

VIRATIO Means and Standard Deviations as a Function of Subject Biographical Characteristics

CHARACTERISTIC	VIRATIO Mean (SD)	F Ratio and p Value	
Sex			
Male	0.70 (0.22)	<1	
Female	0.67 (0.17)		
Age			
196 mo. to 200 mo.	0.63 (0.168)	3.45	<0.03
201 mo. to 204 mo.	0.66 (0.19)		
205 mo. to 216 mo.	0.73 (0.196)		
Class			
Academic stream	0.69 (0.20)	1.12	<0.29
General stream	0.65 (0.17)		
School			
I - A	0.73 (0.18)	0.78	<0.59
I - B	0.66 (0.18)		
II - C	0.68 (0.21)		
II - D	0.58 (0.19)		
II - E	0.66 (0.18)		
III - F	0.67 (0.18)		
III - G	0.71 (0.20)		

a profile of the VIRATIO scores as a function of subject's biographical characteristics. Second, with regard to the steady increase in image preference with age, there are two points of speculation worth noting. First, the subjects who could be expected to have repeated a year would tend to be those whose code preference is the one which is least supported in the school system; this being the image code preference. Thus, the image code preference would tend to predominate in the older group. If this is a factor, however, it will have to be confounded with intelligence since, as reported below, academic stream students tend to be more image-oriented than general stream students. The second consideration involves the fact that this age factor seems to question a speculation made by Forisha (1975) in her developmental study of verbal and image code preferences. In analyzing the development of the two modes, she noted that the abilities developed in curvilinear fashion and that if the curves were projected to ages sixteen or seventeen they would change slope implying that a peak had been reached. Since the present study indicates that relative to verbal ability the image ability of subjects is still improving between ages sixteen and eighteen, the developmental curves are no longer acting in parallel fashion as is indicated with Forisha's ten to twelve year olds. Rather, it would appear that either verbal and image skills are tending to balance one another or verbal skills are reaching a peak while image skills continue to develop.

b. Verbal/Image Code Performance and Prose Recall

In order to complete the comparison of this older sample with the younger samples used by Riding and Calvey, performance on the VI Code test was compared with the immediate recall scores on the four prose passages which differed in styles from being very visually descriptive to acoustically and semantically complex.

The subjects were ordered according to their VIRATIO score and divided into five groups with an equal number of subjects to each. Each subject's mean recall score for each passage was calculated and became the data for analysis. The percent recall for each VIRATIO group on the four prose passages is given in table 3. A two way (VIRATIO X Passage) analysis of variance with repeated measures on the passage factor was performed and is summarized in Table 4. The analysis shows a significant interaction between passage type in its effect on recall. Neither the VIRATIO nor VIRATIO/passage type produced a significant effect on recall. Results of the analysis of variance indicated that, while there was no significant difference between VIRATIO groups in overall recall and no significant interaction between VIRATIO group and passage type, there were significant differences in overall recall scores between the four prose passages. A post-hoc analysis of the passage percent recall means indicated that with the exception of the two semantic passages, all means were significantly different from one another. The t-test analysis results, using a significance level of  $p < 0.01$ , are as follows:

high visual/moderate visual t value = -17.10  $p < 0.001$

high visual/moderate semantic t value = -8.21  $p < 0.001$

high visual/high semantic t value = -6.75  $p < 0.001$

moderate visual/moderate semantic t value = 7.65  $p < 0.001$

moderate visual/high semantic t value = 8.97  $p < 0.001$

moderate semantic/high semantic t value = 1.92  $p < 0.057$

### c. Discussion

The results of this analysis seem to confirm the existence of a verbal/image continuum. Simply due to the wide range of scores and the placement of subjects along the continuum one would expect that when faced with an unintro-duced question requiring either an image or a verbal response, the differences

Mean Percent Recall for Verbal/Image Code Groups on the Four Prose Passages

Verbal/Image Ratio Range	Mean Response Time for Question Type in Seconds		Prose Passage Type				Overall
	Verbal	Image	High Semantic	Moderate Semantic	Moderate Visual	High Visual	
0.22 to 0.5099 High Verbal	1.90	4.53	39.4	40.3	50.8	32.8	40.8
0.51 to 0.6299	2.03	3.55	39.9	40.1	46.5	30.3	39.2
0.63 to 0.7199	1.59	2.37	40.4	45.2	51.6	32.1	42.3
0.72 to 0.8599	2.16	2.75	38.1	41.7	49.3	28.8	39.5
0.86 to 1.13 High Image	2.02	2.09	35.6	26.7	52.7	33.7	39.7
Overall			38.7	40.8	50.0	31.4	

TABLE 3

TABLE 4

Summary of Analysis of Variance-Prose Recall

SOURCE	SS	df	M.S.	F	P
Between Subjects					
VIRATIO (A)	14.37	4	3.59	0.12	0.9743
ERROR	3994.83	136	29.37		
Within Subjects					
Passage Type (B)	976.91	3	325.64	49.47	0.0000
AB	109.92	12	9.16	1.39	0.1667
ERROR	2685.62	408	6.58		

in response latency would indicate that code preference/question type pairing would shorten the response time required. However, the prose recall scores do not strongly indicate that ratio groupings influence the ability of the subject to recall information which is presented in either their apparently preferred or non-preferred form.

If one considers the research of Riding and Dyer (1980) which parallels the extraversion/introversion and the verbal/image continuums, the present results are no more in line with the findings of Jones (1976) who observed no significant difference between introverts and extraverts in the free recall of prose.

On the other hand, however, one might consider several possible explanations for this lack of differential. Firstly, the subjects were only given ten seconds to respond to the passage questions. Paivio and Csapo (1964) concluded that imagery is not usually effective in primary memory, perhaps because defining the task sometimes involves a strong component of memory for sequential order (the forte of the verbal system) as well as for discrete items, and imagery does not effectively represent order information. This could account for the lack of difference, if either group had showed any substantively higher score. In fact, verbal subjects did not show a higher score on the highly verbal passage - their supposed strong point.

Another possible explanation could be that the passage material was too juvenile for seventeen year olds. However, considering the stringent marking system used and the fact that few subjects scored beyond the 50% mark, this explanation cannot be supported.

A third possibility, which at this point is still very tentative, involves the concept of the developmental curves mentioned by Forisha. The V/I code

test used in this study is by no means standardized and as such one cannot say how similar the skills of the subjects in handling image and verbal material are. Even though the mean image response time was over a second longer than the mean verbal response time, this differential could be merely a result of question difficulty. It was previously noted that there was a progressive increase with age in the image ability of subjects relative to their verbal ability. If the verbal and image skills of these subjects are in fact approaching one another then what difference we do see in passage recall may be, by this age, mostly a matter of intelligence as the class effect would imply. The residual differences due to VIRATIO mentioned in the analysis of table 3 may be the full extent of V/I group influence.

RELATIONSHIP OF INFORMATION PROCESSING CODE PREFERENCE TO  
MORAL REASONING & MORAL AFFECT

a. Descriptive Analysis of VIRATIO, ERIAVE and AFFSUM Information

The three groups which made up the subsample for this segment of the study were formed on the basis of their VIRATIO score. Although the three groups were originally intended to include equal numbers of each sex, a miscalculation of one of the female scores in the verbal group resulted in an unequal distribution. As a result the VIRATIO range and sex distribution of the three groups were as follows: verbal (11 M, 9 F) - VIRATIOs .22 to .54, ambimodal (9 M, 11 F) - VIRATIOs .55 to .78 and image (10 M, 10 F) - VIRATIOs .81 to 1.13. Within the sample at large, the average VIRATIO for the male and female subjects were almost identical (M = .688, SD = .277 and M = .683, SD = .225; respectively).

Similarly, within the sample at large, the ERIAVE scores for the sexes were almost identical with the male mean equaling 3.446 (SD = 0.33) and the female mean equaling 3.454 (SD = 0.36). Although there is a wider difference in affect scores between the sexes it is still small with a male mean of 993.3 (SD = 472.6) and a female mean of 918.8 (SD = 462.4). None of these differences were significant.

b. Testing the Hypotheses

Using a significance level of  $p < 0.01$ , a t-test analysis of the mean differences between group ERI and affect scores produced the following results (see table 5).

Hypothesis one stated that while ambimodal subjects would achieve lower scores on the ERI than either the verbal or image group, the verbal group would score higher than the image group. Based on the ERI group means reported in

TABLE 5

Mean ERI and Affect Scores by VIRATIO Group

	VIRATIO GROUP		
	Verbal (0.22 to 0.54)	Ambimodal (0.55 to 0.78)	Image (0.81 to 1.13)
ERI Average	3.46 (SD = 0.378)	3.48 (SD = 0.373)	3.42 (SD = 0.305)
Affect Sum	964.5 (SD = 594.3)	1099.9 (SD = 415.9)	796.1 (SD = 344.2)

table five, the one-tailed t-tests produced no significant results (verbal/ambimodal t value = -0.19,  $p < 0.847$ ; ambimodal/image t value = -0.49,  $p < 0.628$ ; and, verbal/image t value = -0.27,  $p < 0.789$ ).

Hypothesis two stated that while ambimodal subjects would achieve lower affect scores than either the verbal or image group, the image group would score higher than the verbal group. Based on the mean Affect Sums reported in table five, the one-tailed t-tests produced no significant results (verbal/ambimodal t value = 0.82,  $p < 0.418$ ; ambimodal/image t value = 2.49,  $p < 0.018$ ; and verbal/image t value = -1.07,  $p < 0.294$ ). These results, contrary to hypothesis show ambimodal subjects scoring highest and verbal subjects scoring higher than image subjects. This difference between ambimodal and image subjects approaches significance ( $p < 0.018$ ).

Hypothesis three stated that high positive affect would be associated with higher ERI scores. A comparison, using the Pearson Correlation Analysis, found no such significant relationship ( $r = 0.088$ ,  $p < 0.504$ ).

### c. Discussion

As mentioned above, the results of the study regarding the relationship between information processing style and ERI score would suggest that no significant difference existed. The first hypothesis, based on the pilot study, postulated that ambimodal subjects would attain lower scores than those at the extremes. This was not borne out. However, if one considers the pre-pilot hypothesis the story is somewhat different. Riding and Parker (1979) had noted a slight inverted - U tendency in prose recall of sequential material (p. 19). Theoretically, one would expect that those nearer the middle of the continuum would benefit socially because of their ability to see either point of view in any situation. In this vein, then, if one looks again at table five one will see that, although small, the scores attained by the ambimodal

group were higher than those attained by subjects at the extremes, thus supporting the pre-pilot hypothesis to some extent.

Again, regarding the first hypothesis, although the difference is not significant, the scores of the verbal group on the ERI were higher than those of the image group, as postulated in both pre- and post-pilot hypotheses. The results, as they stand, however, must be viewed skeptically because of certain methodological problems to be discussed later.

Hypothesis two postulated that image group members would tend to be aware of and use more positive affect than the verbal group. This was distinctly, although not significantly, not the case. Verbal group members and ambimodal members both scored higher. The methodological problems discussed earlier preclude any judgement of the credibility of this result.

Although hypothesis three was not borne out by significant results, if one looks at table 5, the means suggest that ambimodal subjects, who attain higher ERI scores, do consider positive affect more consistently than those subjects who score closer to the VI continuum extremes.

#### ANALYSIS OF METHODOLOGICAL DATA

As mentioned earlier, when the information processing system preferences of subjects are taken into consideration, the methods used to test these subjects must allow for dual-coding of the information. During the execution of the study, specific aspects of this problem came to light in the administration of the Ethical Reasoning Inventory.

In the pilot study, in an attempt to analyze the effect of 'reading' as opposed to 'reading while listening' on the subject's ERI comprehension and, thus, score; subjects were randomly assigned to two treatment groups. They were read either the first or the second half of the ERI and the other half was left for them to read themselves. When the difference between read and

read/listen scores was totalled, both groups, overall, had improved their scores when they read and listened at the same time. This, however, could imply that one group included more negatively influenced or weakened students than improved students (Zentall and Shaw, 1980), or it could mean that one group improved more. Overall, verbal subjects had a larger positive improvement.

In order to clarify the nature of this difference a new variable was calculated. The RRLF RATIO was computed by dividing the subject's average score when he/she read the ERI themselves by the subject's average score when he/she listened to the experimenter read the ERI while following along in the booklet. Thus, the lower the RRLF RATIO the more improvement there was in the subject's score when they were able to listen as well as read.

There were also two separate groups because of the initial random placement in either the experimenter-read-first-half or the experimenter-read-second-half group. The results of a Pearson correlation analysis of VIRATIO by RRLF RATIO are shown in table six.

The results indicate that for both groups, when VIRATIO increased (that is, as subjects depended more and more on image code) the RRLF RATIO decreased (that is, the subjects improved more and more on the section which the experimenter read to them). Thus, although not significant, the image group improved their ERI score average and presumably, therefore, their comprehension when the material was presented to them in auditory form - the form which least interferes with their preferred information processing mode (Brooks, 1968).

It was not possible to tell from this analysis, however, whether some of the effect noticed here was due to a dilemma effect (whether some of the questions on the ERI tend to draw higher stage answers from subjects generally).

In order to address this question and also to look for similar effects in the main study, a similar analysis was done on the sixty subjects in

TABLE 6

Pearson Correlation - Pilot Study VIRATIO by the Ratio  
of Part Read Divided by Part Read While Listening  
to the Experimenter Read (RRLF RATIO)

	Exp. Read First	Exp. Read Second
	RRLF RATIO	RRLF RATIO
VIRATIO	-0.245 p = 0.379	-0.504 p = 0.055

the main study sample. Rather than work with average scores, each subject's first half and second (last) half scores were totalled and these total scores became two new variables; the F (first) ERI and L (last) ERI scores. One-tailed t-tests were used to compare the FERI and LERI mean total scores within each VIRATIO group. The results are presented in table seven.

Overall, due to the similarity of the first and last half mean total scores for the ambimodal (44.2 and 44.1 respectively) and image (43.8 and 43.6 respectively) groups, it is unlikely that the significant difference in the verbal group first and last mean total scores was due to a dilemma or response type effect. If one looks at the form of the methodology used in administering the ERI in the present study, it may be there lies a possible reason for the significant increase in the last half verbal group mean.

In the present study, all subjects were required to listen to the entire ERI on tape while reading along in the booklet. According to Brooks (1968), listening interferes with what he called 'verbal memory.' It seems plausible that when first presented with the listening task, the verbal subjects found it hindered their comprehension. By the time they had reached the second half, they had either become accustomed to the voice or had found a way to either block it out or ignore it.

This effect is exactly the same as the one found in the pilot study. Because of the different methodological format, however, the effect, in this case, influenced the verbal group rather than the image group.

#### SUMMARY OF THE FINDINGS

Taking into account the results obtained in the statistical analysis of the data presented earlier, the findings of the study are summarized in the following points.

TABLE 7

t-Test Comparison of Mean Total Score for the First Half of the ERI (FERI) and the Last Half of the ERI (LERI)

<u>Group</u>	<u>FERI/Mean</u>	<u>LERI/Mean</u>	<u>t-Value</u>	<u>p Value</u>
VERBAL	41.8	45.8	-3.69	0.002
AMBIMODAL	44.2	44.1	0.10	0.922
IMAGE	43.8	43.6	0.12	0.906

In general, the biographical characteristics of the subjects were not a major influence on the results obtained on the various measures. On the verbal/image code test, the only marked influence concerned age. Image-code preference increased as age increased. The effect was not significant but could be the result of the inclusion of image preference subjects who failed to cope with the verbal orientation of the school system in previous years.

With regard to the effect of verbal/image code preference, there are two aspects to consider. First, contrary to Riding and Calvey's (1981) results, code preference does not seem to influence recall of specific types of prose. This result could have been influenced either by the use of juvenile prose passage material or by the use of volunteers who, as suggested by the literature, represent the middle of the verbal/image code continuum.

Secondly, verbal/image code preference and moral reasoning and affect did not relate to one another in any significant way. There were tendencies, however. Ambimodal subjects, those who were able to use both codes with relative facility, scored higher than extreme code preference subjects on both the Ethical Reasoning Inventory and on the use of positive affect. Methodological concerns aside, ambimodal subjects used positive affect more consistently than image code preference (significant) or verbal code preference subjects.

With regard to moral reasoning and affect, there seems to be no marked correlation between moral reasoning and the use of positive affect in making a moral judgement.

Finally, with regard to methodology, image code preference subjects achieve more mature moral reasoning scores if the test is read aloud to them. Along the same vein, verbal code preference subjects achieve significantly

lower scores on moral reasoning maturity when they are required to listen to the test material while they read it. This effect appears to wear off, since their scores on the last half of the test did not differ significantly from the scores of other code preference groups.

## CHAPTER IV

### CONCLUSIONS AND IMPLICATIONS

#### CONCLUSIONS

The purpose of this study was to examine the relationship of one's information processing system preference to his/her level of maturity in moral reasoning and its associated positive moral affect. Guiding the study was the stage developmental model of moral development and the dual-code model of information processing. The expectation was that these two concepts were related in some specific way. Thus, the major conclusions of this study reside in the answers to the question: To what extent and in what ways are coding preferences related to moral reasoning maturity and positive moral affect?

The most significant noted result concerns the method of presentation of the test materials. If moral reasoning is tested using written material the scores of image-code preference subjects tend to drop. If this material is presented orally, the scores of verbal-code preference subjects are at least initially lower. This may also be the case with the test of moral affect.

Secondly, it would appear that ambimodal subjects, those who use both systems with equal facility, tend to achieve more mature scores in moral reasoning and tend to concern themselves more consistently with positive moral affect. Their ability to see 'both sides of the argument' appears to assist them in achieving mature moral reasoning with a positive perspective earlier than their more extreme code preference fellows.

Other conclusions which merit consideration are the following. Third, there is no significant difference in the maturity of moral reasoning of males

as opposed to that of females. Moral reasoning scores are also not significantly influenced by age (within a sample with age ranging from sixteen to eighteen years), by academic as opposed to general stream choice, nor by school attended. The same results apply to the use of positive moral affect used by the subjects in making a moral decision.

Fourth, verbal/image code preference does not seem to influence a subject's ability to comprehend prose passages which differ as to the degree of imagery and semantic/acoustic complexity which they contain.

#### IMPLICATIONS

The implications of this study lie in three areas: (1) insights for improving the measurement of moral reasoning (2) considerations regarding the measurement of information processing system preference (3) recommendations for further research.

In the first case, the findings of the study question the validity of the voluminous research on moral reasoning. If the oral interview is used to gather data, subjects who favour the verbal code will at least initially have a lower level of comprehension than their image-code preference fellows. Lower comprehension and, one would expect, lower confidence levels could result in the use of more immature moral reasoning.

Similarly, the use of written measures requires that image-code preference subjects interpret written (or visual) stimuli which interferes with their ability to generate the mental imagery which they require for optimal comprehension, again leading to less mature levels of reasoning.

Providing a dual-code situation does not prove to be a sufficient answer since auditory tapes or an experimenter read measure is all-pervasive and will still interfere with verbal-code comprehension.

It would, therefore, seem that the answer lies in assuring that both auditory and written versions of the measure to be used are available for the use of the subjects and that they be given the choice as to whether they wish to use one, the other, or both during the administration of the test.

With regard to the measurement of information processing code preference, there are still many open questions. First, to date no measure of the sort developed by Riding & Calvey has been used extensively enough to provide either standardization data or consistent measurement of its reliability and validity.

The measures in use, at present, are measures of the relative speed of response to one question type over the other. The placement of subjects along a continuum is based on these relative speeds. It is not yet possible to isolate the absolute strengths of the two codes in a single subject from the relative difficulty of the two series of questions. In order to test the development of the two code systems a series of measures, developmentally standardized, which test the absolute strength of the codes, is necessary.

The present research seems to indicate that ambimodal subjects mature more quickly than those at the extreme ends of the continuum. It would be of great interest to know whether this earlier maturity would occur in other developmental processes. Does ambimodal development provide advantages in social and attitudinal areas? Does the development of extreme code dependence result from the social milieu or from specific genetic sources?

Finally, what are the implications of information processing code preferences for education? How must the curriculum, and the methods by which it is taught, be changed in order to assure that all students, whatever their strengths have an equal opportunity to learn and to progress in the educational milieu?

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APPENDICES

1. Main Study Appendices
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## APPENDIX A

### Tests and Measures updated for Main Study

1. Permission Letter
2. Test of Image Verbal Dominance -- February, 1983
3. Affect-Word List

# Midland Collegiate

1983 02 22

Dear Parent/Guardian:

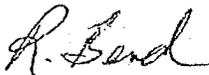
Your son/daughter has expressed an interest in taking part in a study to find out how a person's learning style (visual or auditory) influences the way he/she thinks about right and wrong.

Mr. Al Thorleifson, who is presently studying at the University of Manitoba, will be conducting this study at several rural collegiates during the month of March.

The study will require approximately one and a half hours of the student's individual time. At the conclusion of the study, Mr. Thorleifson will meet with the students individually if they wish to discuss their learning style preference and how it affects their study skills and school performance; and will meet with the group to discuss the ideas on which the study is based and the conclusion of the study itself.

Before including your son/daughter in the study, we would appreciate your completion of the tear-off portion below and return it to the school.

Your truly,



Principal

---

I hereby give permission for \_\_\_\_\_ to  
take part in this learning style/Ethical Reasoning Study.

\_\_\_\_\_  
(Parent/Guardian Signature)

TEST OF IMAGE/VERBAL DOMINANCE

FEBRUARY, 1983

Al Thorleifson

Dept. of Educational Psychology

Faculty of Education

University of Manitoba

## INSTRUCTIONS

As you listen to this tape, you will hear a story about some of the things which happened while I was hitch-hiking in England during the summer of 1982. After each segment of the story, you will be asked a question. I will say the word 'QUESTION' when I am about to ask each one. After each question, please answer just as if I had asked the question in person. The question and your answer will be taped using the second machine. Here is a sample story and two sample questions. Please answer the questions when you hear them.

"The youngster ran down the quiet street under the wide shade trees. She pushed open the rickety gate and walked up the cobbled sidewalk. She knocked on the door of the cottage."

QUESTION: What colour was the door?

QUESTION: Is a youngster a person?

Even though the answers are not in the story itself, I would like you to make up an answer which you think makes sense. Please don't ask the experimenter to explain, you must find an answer on your own.

The story is about to begin.

Thanks.

For three solid weeks the weather held hot and steamy. The hazy English sun baked the countryside, drying the hay crops and ripening the grain. The patchwork fields had begun to take on more contrasting colours, some still lime green, some turned to rich gold; dark green lines of thick hedge marched every which way between the crops. But the weather would not hold.

1. QUESTION: Does the word 'patchwork' mean that every field was the same?

It was the end of July and I was hitch-hiking out of Stratford-upon-Avon on the A439 under a mist-strafted sky that fogged the higher hills, enveloping their treed crowns in hoar. All colours had deepened and the early morning air held a dankness that left me feeling twisted within myself.

2.QUESTION: In this scene, what colour do you see most?

My fear of getting rain-soaked as I walked the roads was compounded by contrasting scents. Each time a lorry roared past me on the narrow road it's acrid exhaust choked me. The swirling exhaust would be replaced by the scent of new-mown hay.

3.QUESTION: Is the word 'lorry' another name for a truck?

Hitching is no easy occupation when the pavement is narrow and the hedges atop the stone walls are

either side of the road look as if a gardener has neatly trimmed them. In truth, the passing trucks whip the branches off as they careen down the winding roads.

4. QUESTION: Is the hedge on the left side of the road taller than a school bus?

I got used to ducking into blackthorn and fuchsia hedges whenever I knew that the trucks weren't going to stop. What I didn't get used to was the possibility of getting hit either by the truck itself or by the stench it left in its wake.

5. QUESTION: When it was used here, did 'wake' mean 'to wake up'?

That morning, however, there weren't so many vehicles. Too early, maybe; or else this A439 was not a truck route. The first ride I got was with a middle-aged couple in an Austin Mini. They were out for a drive. We stopped at a tree nursery and fresh fruit market settled amongst orchards of nearly ripe plums and pears.

6. QUESTION: How far was the fruit market from the road?

My grey-haired hostess decided to buy me a pound of plums and, not to be outdone, her husband decided he would buy coffee. Now, the beverage the English usually refer to as coffee has more of the insipid pungency of hot bog-water than the rich thickness of that wondrous liquor

I was used to getting at home.

7. QUESTION: Which word has a more negative meaning; 'insipid' or 'wondrous'?

As we sat in the coffee shop (the creamery house of the old dairy farm) balancing on plastic chairs which teetered precariously on the cracked and sloping floor, my host asked me where I was headed.

8. QUESTION: Did the floor slope toward the door, or away from the door?

I told him I was heading to South Wales and before I could continue, his face screwed up and he blurted,

"Huh. What do you want to do there? Nothing there but closed factories, soot, unemployment and pick-pockets."

9. QUESTION: What was the speaker doing with his hands?

I asked him politely where he would suggest I go instead. He thought I should head for the middle of Wales where the country was mountainous and, he would even say, beautiful. He waxed lyrical about the rugged beauty of the north-west coast.

10. QUESTION: When he 'waxed lyrical', did he speak deliberately?

He was successfully ignoring the comments of our

waitress, whom his wife was trying to console with pleading eyes. The willowy young woman, her stringy brown hair tied back in a pony tail, wiped wrinkled hands on her white mini-smock and pointedly stated that she came from south Wales and she thought it was very beautiful.

11. QUESTION: What colour were the waitress's eyes?

My host merely raised his voice, adopted a slightly more haughty air, and stated that the only good reason for anyone to go to South Wales would be to see how a country could be made ruinous and ugly by careless industrialization.

12. QUESTION: Who was the man looking at?

I kept my comments low-key and changed the subject (I was in no position to tell either of them they were wrong). Our coffee break concluded without event. The road to Evesham passes between orchards on both sides. When they left me on the main street of town, I wandered under a tall avenue of trees filling my face with plums that were just ripe, still with a twinge of sour near the stone.

13. QUESTION: Does 'twinge' mean the plums were very sour?

I walked south-west out of town to pass a picnic area along the river Avon and watched the fishermen with their long poles casting the shallows among the ducks and cat-tails.

14. QUESTION: How many fishermen did he see?

Heading along the A44, I had already decided not to bother with the industrialized areas. I had been told by many people that unemployment made being held-up much more likely. It had taken little to convince me I should head for west Wales and thus avoid the south.

15. QUESTION: On what part of the road was the narrator walking?

A businessman on his lunch break drove me over the high open country to the circle where the M50 leaves the M5. I figured on taking a cut-off for Hereford once I was closer to the Welsh border and heading north-west that way, but luck changed that idea.

16. QUESTION: When the narrator was 'figuring', was he working with numbers?

My next ride; a young couple in a rickety Volvo stopped and asked if I wanted a ride to Port Talbot on the south coast of Wales. It's not often that one gets a ride as far as that (well over a hundred miles) and so I threw caution to chaos and got in.

17. QUESTION: Is a "rickety Volvo" in good condition?

These two, a husband and wife, were teaching at a university in the Midlands. She, native-born Welsh, was glad to be coming home for a holiday. He; small, dark and bearded; spoke very little and with his brows knitted he listened intently to the sounds emanating from his finicky engine.

18. QUESTION: Was this man sitting straight up in his seat?

My first impression of the border country near Whitchurch was of hill country covered with spruce and pine. I had not seen country like this anywhere in England but it reminded me of the rugged Laurentian Shield country on the road between Vermillion Bay and Red Lake, Ontario.

19. QUESTION: Does 'rugged' have the same meaning as 'rough'?

I mentioned my surprise at the tree-covered hills and the young woman's face softened so that I could see her love of country. She mentioned almost reverently that it had been the wildness of the border country that had saved the Welsh from the English many times in the past.

20. QUESTION: Does 'reverently' mean the same as 'intently'?

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Although the story does go on, we have come to the end of this Verbal/Image Code Test. I would like to thank you for your co-operation.

NAME \_\_\_\_\_

AFFECT - WORD LIST

Directions - Look at each word in turn and mark its scale indicating how positive a feeling it leaves you with. Work quickly - what you mark should be your first impression.

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example	(- _ _ _ _ _ +)	defend	(- _ _ _ _ _ +)
fair	(- _ _ _ _ _ +)	pay	(- _ _ _ _ _ +)
jail	(- _ _ _ _ _ +)	faulty	(- _ _ _ _ _ +)
trust	(- _ _ _ _ _ +)	trustful	(- _ _ _ _ _ +)
astray	(- _ _ _ _ _ +)	require	(- _ _ _ _ _ +)
explain	(- _ _ _ _ _ +)	family	(- _ _ _ _ _ +)
fulfill	(- _ _ _ _ _ +)	devine	(- _ _ _ _ _ +)
spark	(- _ _ _ _ _ +)	self-guidance	(- _ _ _ _ _ +)
told	(- _ _ _ _ _ +)	gain	(- _ _ _ _ _ +)
serious	(- _ _ _ _ _ +)	earn	(- _ _ _ _ _ +)
essential	(- _ _ _ _ _ +)	return	(- _ _ _ _ _ +)
share	(- _ _ _ _ _ +)	selfishness	(- _ _ _ _ _ +)
oath	(- _ _ _ _ _ +)	cure	(- _ _ _ _ _ +)
accept	(- _ _ _ _ _ +)	demonstrate	(- _ _ _ _ _ +)
truthfulness	(- _ _ _ _ _ +)	exception	(- _ _ _ _ _ +)
effects	(- _ _ _ _ _ +)	justification	(- _ _ _ _ _ +)
intention	(- _ _ _ _ _ +)	yourself	(- _ _ _ _ _ +)
take	(- _ _ _ _ _ +)	difficult	(- _ _ _ _ _ +)
anytime	(- _ _ _ _ _ +)	institution	(- _ _ _ _ _ +)
feeling	(- _ _ _ _ _ +)	equal	(- _ _ _ _ _ +)
satisfy	(- _ _ _ _ _ +)	mercy	(- _ _ _ _ _ +)

responsible	(- _ _ _ _ _ +)	obligatory	(- _ _ _ _ _ +)
count	(- _ _ _ _ _ +)	borrow	(- _ _ _ _ _ +)
double	(- _ _ _ _ _ +)	everyone	(- _ _ _ _ _ +)
explicit	(- _ _ _ _ _ +)	precious	(- _ _ _ _ _ +)
promise	(- _ _ _ _ _ +)	replace	(- _ _ _ _ _ +)
breaking	(- _ _ _ _ _ +)	protect	(- _ _ _ _ _ +)
rights	(- _ _ _ _ _ +)	credibility	(- _ _ _ _ _ +)
trouble	(- _ _ _ _ _ +)	ensue	(- _ _ _ _ _ +)
friendship	(- _ _ _ _ _ +)	guilt	(- _ _ _ _ _ +)
reprimand	(- _ _ _ _ _ +)	Judy	(- _ _ _ _ _ +)
illegal	(- _ _ _ _ _ +)	reasoning	(- _ _ _ _ _ +)
standards	(- _ _ _ _ _ +)	intelligence	(- _ _ _ _ _ +)
create	(- _ _ _ _ _ +)	expect	(- _ _ _ _ _ +)
future	(- _ _ _ _ _ +)	degrade	(- _ _ _ _ _ +)
guidance	(- _ _ _ _ _ +)	necessitate	(- _ _ _ _ _ +)
talk	(- _ _ _ _ _ +)	generalize	(- _ _ _ _ _ +)
role	(- _ _ _ _ _ +)	term	(- _ _ _ _ _ +)
faults	(- _ _ _ _ _ +)	fundamental	(- _ _ _ _ _ +)
command	(- _ _ _ _ _ +)	kill	(- _ _ _ _ _ +)
favour	(- _ _ _ _ _ +)	irrational	(- _ _ _ _ _ +)
infinite	(- _ _ _ _ _ +)	preservation	(- _ _ _ _ _ +)
individual	(- _ _ _ _ _ +)	replace	(- _ _ _ _ _ +)
eternal	(- _ _ _ _ _ +)	feelings	(- _ _ _ _ _ +)
guilty	(- _ _ _ _ _ +)	integrity	(- _ _ _ _ _ +)
sentence	(- _ _ _ _ _ +)	desperate	(- _ _ _ _ _ +)

intuitive	(- _ _ _ _ _ +)	trustworthy	(- _ _ _ _ _ +)
cheat	(- _ _ _ _ _ +)	faith	(- _ _ _ _ _ +)
fail	(- _ _ _ _ _ +)	grow	(- _ _ _ _ _ +)
save	(- _ _ _ _ _ +)	injustice	(- _ _ _ _ _ +)
impression	(- _ _ _ _ _ +)	reform	(- _ _ _ _ _ +)
consequences	(- _ _ _ _ _ +)	old	(- _ _ _ _ _ +)
knew	(- _ _ _ _ _ +)	foolish	(- _ _ _ _ _ +)
both	(- _ _ _ _ _ +)	realize	(- _ _ _ _ _ +)
excusable	(- _ _ _ _ _ +)	solution	(- _ _ _ _ _ +)
reason	(- _ _ _ _ _ +)	infringe	(- _ _ _ _ _ +)
consideration	(- _ _ _ _ _ +)	friend	(- _ _ _ _ _ +)
reform	(- _ _ _ _ _ +)	character	(- _ _ _ _ _ +)
invulnerable	(- _ _ _ _ _ +)	hardship	(- _ _ _ _ _ +)
emotion	(- _ _ _ _ _ +)	precedence	(- _ _ _ _ _ +)
good	(- _ _ _ _ _ +)	intellect	(- _ _ _ _ _ +)
retaliatory	(- _ _ _ _ _ +)	procession	(- _ _ _ _ _ +)
kept	(- _ _ _ _ _ +)	betrayal	(- _ _ _ _ _ +)
essence	(- _ _ _ _ _ +)	himself	(- _ _ _ _ _ +)
important	(- _ _ _ _ _ +)	close	(- _ _ _ _ _ +)
personal	(- _ _ _ _ _ +)	shouldn't	(- _ _ _ _ _ +)
god-like	(- _ _ _ _ _ +)	honourable	(- _ _ _ _ _ +)
crime	(- _ _ _ _ _ +)	ownership	(- _ _ _ _ _ +)
enough	(- _ _ _ _ _ +)	unjust	(- _ _ _ _ _ +)
justice	(- _ _ _ _ _ +)	hold	(- _ _ _ _ _ +)
interest	(- _ _ _ _ _ +)	quietude	(- _ _ _ _ _ +)
means	(- _ _ _ _ _ +)	sick	(- _ _ _ _ _ +)

dilemma	(- _ _ _ _ _ +)	recognize	(- _ _ _ _ _ +)
less	(- _ _ _ _ _ +)	punish	(- _ _ _ _ _ +)
need	(- _ _ _ _ _ +)	stranger	(- _ _ _ _ _ +)
preserve	(- _ _ _ _ _ +)	loss	(- _ _ _ _ _ +)
disrupt	(- _ _ _ _ _ +)	death	(- _ _ _ _ _ +)
law	(- _ _ _ _ _ +)	self-sufficient	(- _ _ _ _ _ +)
strictly	(- _ _ _ _ _ +)	lost	(- _ _ _ _ _ +)
logical	(- _ _ _ _ _ +)	request	(- _ _ _ _ _ +)
self-condemned	(- _ _ _ _ _ +)	intent	(- _ _ _ _ _ +)
help	(- _ _ _ _ _ +)	honesty	(- _ _ _ _ _ +)
sensitive	(- _ _ _ _ _ +)	sacred	(- _ _ _ _ _ +)
universal	(- _ _ _ _ _ +)	confide	(- _ _ _ _ _ +)
wantonly	(- _ _ _ _ _ +)	society	(- _ _ _ _ _ +)
better	(- _ _ _ _ _ +)	benefit	(- _ _ _ _ _ +)
honour	(- _ _ _ _ _ +)	honest	(- _ _ _ _ _ +)
physical	(- _ _ _ _ _ +)	integrate	(- _ _ _ _ _ +)
steal	(- _ _ _ _ _ +)	pain	(- _ _ _ _ _ +)
develop	(- _ _ _ _ _ +)	severity	(- _ _ _ _ _ +)
hurt	(- _ _ _ _ _ +)	duty	(- _ _ _ _ _ +)
disorder	(- _ _ _ _ _ +)	human (-	(- _ _ _ _ _ +)
interests	(- _ _ _ _ _ +)	should	(- _ _ _ _ _ +)
unfair	(- _ _ _ _ _ +)	money	(- _ _ _ _ _ +)
life	(- _ _ _ _ _ +)	outweigh	(- _ _ _ _ _ +)
sure	(- _ _ _ _ _ +)	power	(- _ _ _ _ _ +)
legalism	(- _ _ _ _ _ +)	love	(- _ _ _ _ _ +)
action	(- _ _ _ _ _ +)	business	(- _ _ _ _ _ +)

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special	(- _ _ _ _ _ +)	principle	(- _ _ _ _ _ +)
internalize	(- _ _ _ _ _ +)	legitimate	(- _ _ _ _ _ +)
qualitative	(- _ _ _ _ _ +)	appeal	(- _ _ _ _ _ +)
live	(- _ _ _ _ _ +)	responsibility	(- _ _ _ _ _ +)
self-blame	(- _ _ _ _ _ +)	support	(- _ _ _ _ _ +)
wouldn't	(- _ _ _ _ _ +)	life-preserving	(- _ _ _ _ _ +)
normal	(- _ _ _ _ _ +)	inner	(- _ _ _ _ _ +)
desirable	(- _ _ _ _ _ +)	respect	(- _ _ _ _ _ +)
living	(- _ _ _ _ _ +)	state	(- _ _ _ _ _ +)
right	(- _ _ _ _ _ +)	lie	(- _ _ _ _ _ +)
someone	(- _ _ _ _ _ +)	deteriorate	(- _ _ _ _ _ +)
legal	(- _ _ _ _ _ +)	relationship	(- _ _ _ _ _ +)
self-respect	(- _ _ _ _ _ +)	separate	(- _ _ _ _ _ +)
immediate	(- _ _ _ _ _ +)	more	(- _ _ _ _ _ +)
consistency	(- _ _ _ _ _ +)	ask	(- _ _ _ _ _ +)
herself	(- _ _ _ _ _ +)	prior	(- _ _ _ _ _ +)
same	(- _ _ _ _ _ +)	wishes	(- _ _ _ _ _ +)
understand	(- _ _ _ _ _ +)	value	(- _ _ _ _ _ +)
hard	(- _ _ _ _ _ +)	best	(- _ _ _ _ _ +)
attached	(- _ _ _ _ _ +)	millions	(- _ _ _ _ _ +)
punishment	(- _ _ _ _ _ +)	difference	(- _ _ _ _ _ +)
inconsistency	(- _ _ _ _ _ +)	wrongs	(- _ _ _ _ _ +)
harm	(- _ _ _ _ _ +)	unreasoning	(- _ _ _ _ _ +)
suffer	(- _ _ _ _ _ +)	account	(- _ _ _ _ _ +)
deny	(- _ _ _ _ _ +)	price	(- _ _ _ _ _ +)
ideal	(- _ _ _ _ _ +)	between	(- _ _ _ _ _ +)

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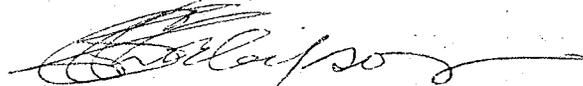
basing	(- _ _ _ _ _ _ _ _ +)	maintain	(- _ _ _ _ _ _ _ _ +)
consider	(- _ _ _ _ _ _ _ _ +)	undermine	(- _ _ _ _ _ _ _ _ +)
communication	(- _ _ _ _ _ _ _ _ +)	alive	(- _ _ _ _ _ _ _ _ +)
motivational	(- _ _ _ _ _ _ _ _ +)	open	(- _ _ _ _ _ _ _ _ +)
worth	(- _ _ _ _ _ _ _ _ +)	Present	(- _ _ _ _ _ _ _ _ +)
concern	(- _ _ _ _ _ _ _ _ +)	believe	(- _ _ _ _ _ _ _ _ +)
decision	(- _ _ _ _ _ _ _ _ +)	debt	(- _ _ _ _ _ _ _ _ +)
unless	(- _ _ _ _ _ _ _ _ +)	values	(- _ _ _ _ _ _ _ _ +)
claim	(- _ _ _ _ _ _ _ _ +)	obligation	(- _ _ _ _ _ _ _ _ +)
chaos	(- _ _ _ _ _ _ _ _ +)	mutual	(- _ _ _ _ _ _ _ _ +)
morality	(- _ _ _ _ _ _ _ _ +)	worse	(- _ _ _ _ _ _ _ _ +)
appreciation	(- _ _ _ _ _ _ _ _ +)	betray	(- _ _ _ _ _ _ _ _ +)
obedience	(- _ _ _ _ _ _ _ _ +)	confidence	(- _ _ _ _ _ _ _ _ +)
person	(- _ _ _ _ _ _ _ _ +)	pointless	(- _ _ _ _ _ _ _ _ +)
violation	(- _ _ _ _ _ _ _ _ +)	absolute	(- _ _ _ _ _ _ _ _ +)
motives	(- _ _ _ _ _ _ _ _ +)	bother	(- _ _ _ _ _ _ _ _ +)
purpose	(- _ _ _ _ _ _ _ _ +)	depend	(- _ _ _ _ _ _ _ _ +)
anyone	(- _ _ _ _ _ _ _ _ +)	consciousness	(- _ _ _ _ _ _ _ _ +)
belong	(- _ _ _ _ _ _ _ _ +)	alternative	(- _ _ _ _ _ _ _ _ +)
criminal	(- _ _ _ _ _ _ _ _ +)	uphold	(- _ _ _ _ _ _ _ _ +)
necessary	(- _ _ _ _ _ _ _ _ +)	voice	(- _ _ _ _ _ _ _ _ +)
correctional	(- _ _ _ _ _ _ _ _ +)	why	(- _ _ _ _ _ _ _ _ +)
wrong	(- _ _ _ _ _ _ _ _ +)	citizen	(- _ _ _ _ _ _ _ _ +)
circumstance	(- _ _ _ _ _ _ _ _ +)	order	(- _ _ _ _ _ _ _ _ +)
protection	(- _ _ _ _ _ _ _ _ +)	pet	(- _ _ _ _ _ _ _ _ +)
commitment	(- _ _ _ _ _ _ _ _ +)	done	(- _ _ _ _ _ _ _ _ +)

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moral	(- _ _ _ _ _ _ _ _ +)	overcharge	(- _ _ _ _ _ _ _ _ +)
correction	(- _ _ _ _ _ _ _ _ +)	conscience	(- _ _ _ _ _ _ _ _ +)
again	(- _ _ _ _ _ _ _ _ +)	affection	(- _ _ _ _ _ _ _ _ +)
valuable	(- _ _ _ _ _ _ _ _ +)	basis	(- _ _ _ _ _ _ _ _ +)
obey	(- _ _ _ _ _ _ _ _ +)	violate	(- _ _ _ _ _ _ _ _ +)
property	(- _ _ _ _ _ _ _ _ +)	clear	(- _ _ _ _ _ _ _ _ +)
credibility	(- _ _ _ _ _ _ _ _ +)	dishonest	(- _ _ _ _ _ _ _ _ +)
authority	(- _ _ _ _ _ _ _ _ +)	unemotional	(- _ _ _ _ _ _ _ _ +)
donate	(- _ _ _ _ _ _ _ _ +)	chance	(- _ _ _ _ _ _ _ _ +)
weakness	(- _ _ _ _ _ _ _ _ +)	disappointment	(- _ _ _ _ _ _ _ _ +)
must	(- _ _ _ _ _ _ _ _ +)	work	(- _ _ _ _ _ _ _ _ +)

---

Thanks for your co-operation,



Al Thorleifson

## APPENDIX B

### Scoring System for Prose Passage Recall Test

The following is a list of the key words which formed valid responses to the questions of the Prose Passage Recall Test used by Riding and Calvey (1981). The responses are listed according to the question and prose selection to which they refer. Commas divide each group of words for which a point was given. The number of points per question and the number of points per passage are also listed on the right hand side of the page.

PROSE SELECTION

1. Velvety, Branching, Brass, fire sunrise	4
2. Scarlet, Leather, Red as Holly Berries, Bells,	4
3. Swift, Dark, Shadow	3
4. Fat, Little, Dwarf	3
5. Polar, Bear, Fur	3
6. Long, Tassel	2
7. Yes	1
8. A Great, Lady, Queen	3
9. No	1
10. Edmund	1
11. Swan-white, Fur	2
12. Long, Golden, Staff	3
13. Crown	1
14. White	1
15. Proud and cold, as Moon, on Frosty Night	3
Total	<u>35</u>

PROSE SELECTION 2

1. Rain, Warm	2
2. Royal, Purple, Saffron	3
3. Mary	1
4. Ivy	1
5. Caw-Caw	1
6. Top, Of The Wall	2
7. Blue-Black	2
8. Wisely	1
9. Nervous	1
10. Flew, Across the Garden	2
11. Dwarf Apple Tree	3
12. Reddish	1
13. Bushy	1
14. Watching the Gardener	2
15. Dickon	1
Total	<u>24</u>

PROSE SELECTION 3

1. Shorell	1
2. Saxon	1
3. I am your man.	1
4. Yes	1
5. Jocasta, Wife, of King Paresha	3
6. Bellora	1
7. Paresha	1

8. Dim Chamber	2
9. Golden Cross	2
10. Silvery, Rings, Of Pearls, and Rubies	4
11. Jocasta	1
12. To speak the oath in Saxon	1
13. Bowed, Humbly to Jocasta	2
14. Sang, Happily	2
15. I'll be your follower if you have given my family back.	2
Total	<u>24</u>

PROSE SELECTION 4

1. Myagino	1
2. No	1
3. Kyoto	1
4. No, A Lord, of Ya-Ha-Ta	2
5. May he live forever	1
6. Dead	1
7. In Battle, Against Torama-Ansta	2
8. A Child	1
9. Hated Her	1
10. The girl says so.	1
11. Marry her, to Xuru-ga Aku	2
12. A Tarkan, Lord, of Gy-os-on	3
13. Evil Advice	2
14. Grand Visier	2
15. When the old one dies	1
Total	<u>22</u>

## APPENDIX C

### Summary of Affect Word List - Individual word values

The following list includes all words chosen by subjects in the ERI study as being the words which most helped them decide that the responses chosen were most like their kind of thinking. The number listed with each word is the sum total of all the individual values (ranging from -3 to +3) marked by the sixty subjects during administration of the affect measure. The words appear in the order they appeared in the original measure.

example	26	defend	65	fair	84	pay	9
jail	-110	faulty	-107	trust	143	trustful	-132
astray	-80	require	3	explain	-46	family	119
fulfill	100	devine	71	spark	54	told	10
self-guidance	84	gain	84	serious	-47	earn	95
essential	56	return	37	share	119	selfishness	-127
oath	93	cure	89	accept	83	demonstrate	24
truthfulness	-139	exception	28	effects	1	justification	66
intention	36	yourself	79	take	-68	difficult	-70
anytime	23	institution	-69	feeling	82	equal	54
satisfy	106	mercy	47	obligatory	-16	responsible	107
count	12	borrow	-31	double	35	everyone	80
explicit	21	precious	107	promise	123	replace	-8
breaking	-94	protect	95	rights	90	credibility	46
trouble	-117	ensue	-12	friendship	149	guilt	-106
reprimand	-34	Judy	-19	illegal	-142	reasoning	35
standards	45	intelligence	88	create	80	expect	30
future	107	degrade	-103	guidance	73	necessitate	-15
talk	90	generalize	11	role	23	term	-18
faults	-110	fundamental	24	command	-15	kill	-146
favour	55	irrational	-93	infinite	27	preservation	46
individual	80	replace	-1	eternal	86	feelings	98
guilty	-111	integrity	58	sentence	-56	desperate	-71
intuitive	16	trustworthy	139	cheat	-144	faith	133
fail	-139	grow	91	save	10	injustice	-130
impression	50	reform	12	old	-6	consequences	-3
knew	45	foolish	-83	both	31	realize	37
excusable	-10	solution	60	reason	35	infringe	-55
consideration	95	friend	139	reform	21	character	90
inviolable	-36	hardship	-63	emotion	89	precedence	9
good	129	intellect	81	retaliatory	-29	procession	10
kept	-11	betrayal	-141	essence	21	himself	16
important	105	close	60	personal	115	shouldn't	-90
god-like	73	honourable	107	crime	-144	ownership	66
enough	7	unjust	-117	justice	92	hold	36
interest	77	quietude	37	means	20	sick	-127
dilemma	-68	recognize	62	less	-86	punish	-71
need	6	stranger	-11	preserve	51	loss	-92
disrupt	-84	death	-135	law	71	self-	68
strictly	-46	lost	-108	logical	73	sufficient	
self-						request	29
condemned	-39	intent	20	help	35	honesty	146
sensitive	79	sacred	88	universal	65	confide	94
wantonly	-69	society	41	better	80	benefit	82
honour	128	honest	139	physical	92	integrate	22
steal	-142	pain	-121	develop	64	severity	-69
hurt	-111	duty	35	disorder	-95	human	103
interests	81	should	30	unfair	-116	money	62
life	107	outweigh	-16	sure	36	power	31
legalism	55	love	153	action	62	business	40

special	103	principle	49	internalize	17	legitimate	53
qualitative	40	appeal	62	live	115	self-blame	-59
responsibility	96	wouldn't	-63	life-	92	normal	49
				preserving			
desirable	84	respect	115	living	97	state	4
right	105	lie	-136	someone	73	deteriorate	-107
legal	86	relation-	93	separate	-63	self-respect	112
		ship					
immediate	28	more	33	consistency	42	ask	38
herself	67	prior	9	same	17	wishes	56
understand	89	value	95	hard	-51	best	105
attached	46	millions	60	punishment	-76	difference	-34
inconsistency	-77	wrongs	-119	harm	-129	unreasoning	-104
suffer	-136	account	2	deny	-108	price	-13
ideal	63	between	7	basing	9	maintain	46
consider	42	undermine	-46	communication	80	alive	112
motivational	60	open	96	worth	79	present	68
concern	73	believe	109	decision	53	debt	-101
unless	-39	values	90	claim	16	obligation	58
chaos	-114	mutual	77	morality	41	worse	-99
appreciation	100	betray	-115	obedience	77	confidence	80
person	84	pointless	-74	violation	-118	absolute	42
motives	12	bother	-62	purpose	50	depend	8
anyone	42	belong	71	consciousness	51	alternative	32
criminal	-141	uphold	26	necessary	32	voice	75
correctional	-4	why	-4	wrong	-123	citizen	80
circumstance	-7	order	16	protection	77	pet	106
commitment	91	done	39	moral	85	overcharge	-79
correction	29	conscience	26	again	14	affection	108
valuable	84	basis	6	obey	77	violate	-100
property	56	clear	59	credibility	71	dishonest	-140
authority	55	donate	78	unemotional	-106	weakness	-93
disappoint-	-112	must	-1	work	46		
ment							

**ADDITIONAL APENDICES**

THE RELATIONSHIP BETWEEN VERBAL AND IMAGE  
LEARNING STYLE AND THE COGNITIVE AND AFFECTIVE  
DIMENSIONS OF MORAL DEVELOPMENT

\*SUMMARY OF PILOT STUDY\*

ALL TESTS AND MEASURES COMPOSED FOR  
THIS STUDY ARE INCLUDED IN AN APPENDIX

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FEBRUARY 9, 1983

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## SUMMARY OF PILOT STUDY

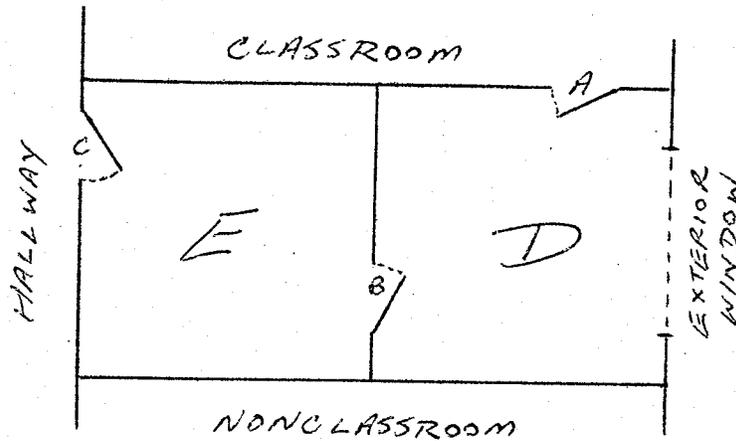
### SETTING

Permission to set up a pilot study was obtained by telephone from the superintendent of schools for Interlake School Division, Mr. Gladwyn Scott. He suggested I contact the principal of one of the three high schools in the division to discuss the idea. After discussion with Mr. Scott, I decided to contact Mr. Bernie Hendricks at Stonewall Collegiate since it was the largest high school in the division, with over one hundred students in Grade Eleven.

Mr. Hendricks was prepared to support the study after previewing the materials which I proposed using. With the permission of Mr. Hendricks and that of the Vice-Principal, Ms. Cathy Campbell, I spoke to the students, requesting their assistance. Seventy-three students requested copies of the permission letter (see appendix) which I required their parents sign before I included the students in the study.

Eventually, thirty students submitted signed permission slips. The sample included twenty girls and ten boys. The school population is split fifty/fifty academic as opposed to general students. The boys in the study were split three to seven in academic/general and the girls were split sixteen to four in academic/general. I decided to run the study, uneven as it was.

The school provided two rooms for our use, as shown in the diagram. Room D was used for the individual administration sessions with door A closed at all times. Room E was monitored by my assistant and served as a reception area and to allow the subjects to complete the student-read sections of the



1. Diagram of rooms in which pilot study was conducted.

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ERI. Door B was closed while individual administration of the tests was being conducted.

The second section of the study was carried out in designated classrooms during student studies one week after the administration of the Verbal/Image Code Test and the ERI. The second section included administration of the Affect Scale Test and the Prose Passage Recall Test. Students were asked at that time to fill out evaluation forms which dealt with their perception of the intent of the study.

I have arranged to report the summary results of the study to the students who took part in the study and to the staff of the collegiate as well.

#### THE VERBAL/IMAGE CODE TEST

##### COMPOSITION

This measure is based on the work of Riding and Calvey (1981). Their test, which was used with subjects ten and eleven years old, was composed of modified selections from Kenneth Grahame's The Wind in the Willows. It consisted of ten prose passages and ten questions, five based on verbal associations and five based on topics requiring creation of

a visual image. In my opinion, the selections and the nature of the questions indicated that the test was too juvenile for use with sixteen year old subjects. I also doubled the number of questions to twenty (ten of each type) in order to provide a more reliable data base.

The text used consists of a series of passages from a short story written by myself which describe incidents which occurred while I was hitch-hiking in England and Wales in 1982. These selections contain examples both of concrete description of people and the countryside and abstract concepts such as road and city names and numbers. The twenty passages range in length from thirty-six to seventy-four words.

The questions devised for each passage could not be answered from the information in the passages themselves. Half of the questions were considered more easily answerable using image-coded thought. The other half were based on verbal associative concepts and thus considered more easily answerable using verbally-coded thought. Question types were randomly distributed among the passages.

The text and the accompanying questions were then tape-recorded. A male voice read the text of each passage, paused for approximately three seconds, and spoke the word 'question' before reading the appropriate question. Each question was followed by a five second pause. The reader then continued to the next passage.

The rate of presentation of the material was arranged with consideration given to the work of Paivio, Phillipchalk and Rowe (1975). They suggest that a slower rate of presentation would facilitate verbal coding of pictures as well as

image arousal of words. Coding difficulties would be equalized as long as the presentation time was not so slow as to destroy verbal-sequential coding (Paivio, 1975b). Based on the results of the study, it would appear that both of these problems have been resolved satisfactorily.

There are several factors which must be considered regarding the administration of these tests and their results. Brook (1968) reported that while reading interferes more with visual memory aroused by the message than does language, listening interferes more with verbal memory. As a result, this test would favour visual learning styles simply because it is auditorially presented. This could explain why there seem to be more imagers in the Riding and Calvey (1981) study than there are verbalizers. However, this would imply that the Riding and Calvey test was standardized in some way. There is no indication of this in their work and in any case, standardization is not a concern. This coding test is simply a method by which subjects are distributed along a continuum. Their score simply designates their position on that continuum relative to the other subjects in the study, not to any standardized population. Thus, a subject is designated as 'imager' or 'verbalizer' merely as compared to how visual or verbal the remaining subjects are. As such, when analyzing the data, we must make the assumption that in our sample, as theoretically in the population, there is a half and half split between visual and verbal learners. The question as to whether this is in fact true in the population is still open, since no such studies have yet been attempted.

## ADMINISTRATION

As each subject was introduced to the setting, I cautioned them not to discuss the way in which the study was carried out, in order to assure that the results would not be prejudiced.

As the subjects listened to the tape and answered the questions, a second tape-recorder was used to tape just the questions and the subjects' responses. On the first day, I manually switched the master tape on and off when subjects required more than five seconds to respond. This distracted the subjects. Beginning on the second day of testing, I used remote switches to turn the tape decks on and off at the appropriate times. I also found it necessary to cover the lights on the tape deck face and the tape housing itself since both lights and tape rotation distracted the subjects. Although the order of switching the tape decks on and off was somewhat tricky, I missed only one data point out of a total of six hundred. The method becomes rote after a very short while.

Classroom noise was a problem on occasion even though the door between the rooms was always closed. On about ten data points, exact measure was difficult but still accurate to within one-tenth of a second (using the method described below). The data for each day fit easily onto a ninety minute tape.

## ANALYSIS OF DATA

These tapes were analyzed by feeding the electrical imprint of the voices which was registered on the tapes through the tape deck into a Hewlett Packard 7402A two-

channel strip-chart recorder. The chart speed was set at five millimeters per second as this speed provided adequate measurability without waste of paper. The right strip was used and the voltage was calibrated at twenty milli-volts per division. Thus, time and voltage were the two divisions. Basal vibration rate (the width of the vibration appearing on the chart paper when the tape was 'silent') was controlled by using the volume control. Head phones allowed me to monitor the voices as I watched the tracking vibrations on the chart. As can be seen on the sample readout below, I marked and numbered the question end and response beginning in each case as I listened to the tape. This was necessary due to extraneous noises, clicks and shuffles which would be indistinguishable from data if viewed without the accompanying sound.

Having set the basal vibration to a width of approximately one millimeter, I decided upon a convention of gauging the end of questions as being that point at which the vibration width dropped to less than two millimeters. The same convention was used to gauge the beginning of answers. 'Aah', 'hum' or other such vocalizations were not considered as the beginning of the response. The response was assumed to begin with the first articulate word.

Using the graphed voices, it was then possible to measure the response latency with a millimeter ruler. Each subject's response times were recorded on data sheets (see appendix). The total number of seconds required for all ten verbal questions was averaged and then divided by the totalled and averaged number of seconds required for all ten image questions. In cases where data points were invalid or

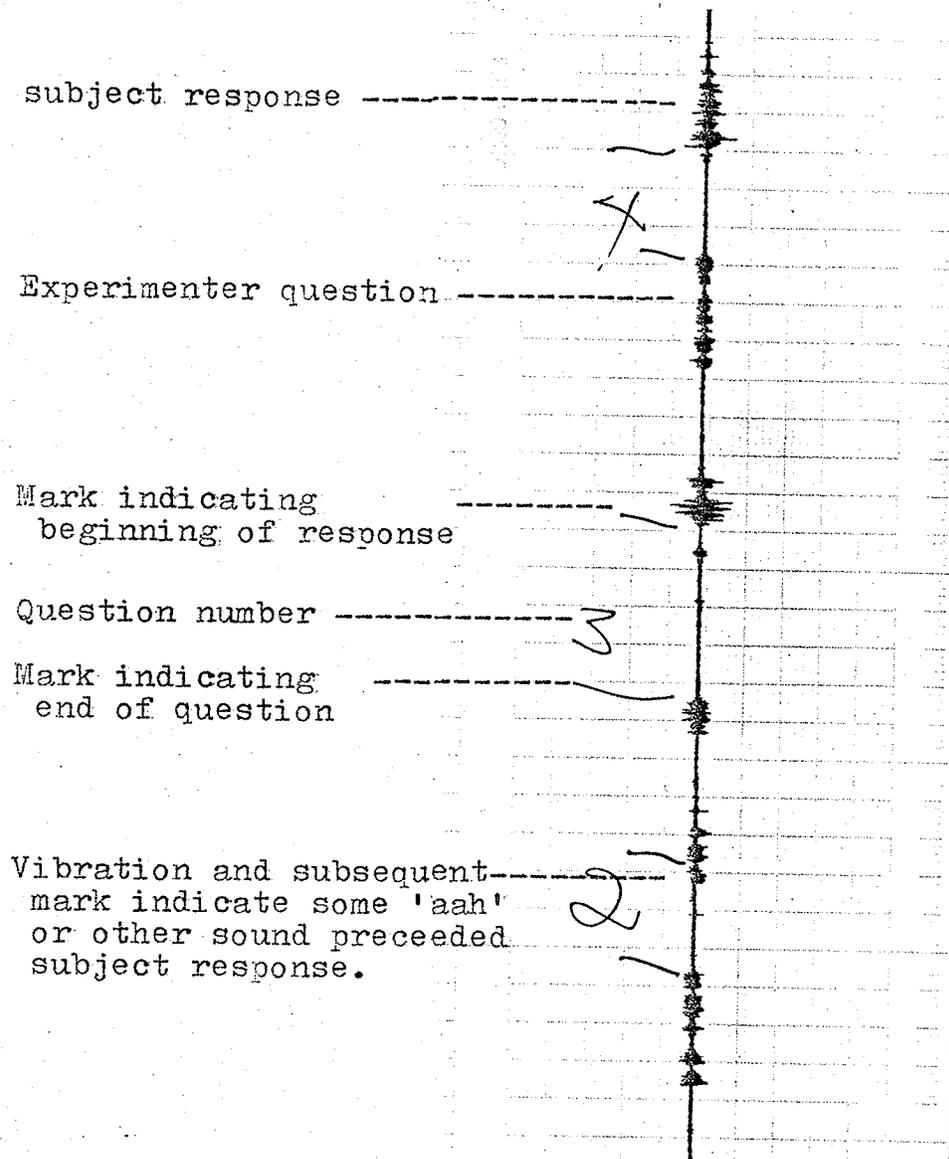


Diagram of strip-chart record of Verbal/Image Code Test data (unused left chart excluded).

missing, the total timetaken, excluding the missing data, was averaged based on the number of valid data points. This ratio became the subject's V/I Code Score.

This code score would equal one if their skills in both learning styles was equal, and if the test provided questions of equal difficulty.

In order to decrease the number of invalidated data points, the instrument will be altered as described below.

## ANALYSIS OF INSTRUMENT

Based on the data analysis, there are a number of problems with specific parts of the code test itself. I will discuss these problems and the intended revisions.

The introduction, along with the information provided, should include: i. two sample questions (one of each type) and a sample text. This due to the confusion expressed by several students as they first began the test. This was especially a problem when they heard the first 'image' question. ii. the subjects should be informed that if they do not 'know' the answer they should guess at an answer. They should say 'I don't know' only if all else fails. iii. a suggestion that they answer the question posed in the tape just as if a real person had asked it.

These changes should prevent problems which surfaced in the introduction situation.

The format of the questions was too abrupt for certain students. The question "What is a lorry?" proved impossible for some students who had no concept of what a 'lorry' was. An alternative format would be "Is the word 'lorry' another name for a 'bus'?"

The reference in the fourth passage to the width of the road (twelve feet) proved a cue to verbalizers. It became their answer to the question concerning the height of the hedge. To prevent this, question four will be changed to "Is the hedge as tall as the truck?"

In the seventh passage, the ethnic references will be dropped since, although they induced no comment from the subjects, they seemed to distract from the main focus. Their

replacement will be as verbal but not as directed. Specifically, "Now the beverage they served us and called coffee had more of the insipid pungency of hot bog water than the rich thickness of that wondrous liquor I was used to drinking in Canada."

Question ten, concerning the term 'to wax lyrical', will be altered since the term was both too literary and too archaic to require a direct definition. An alternative question form would be "When he 'waxed lyrical', was the speaker discussing his ideas thoughtfully?"

With regard to the image questions in general, the use of the present tense 'is' as in "Who is the man looking at?", proved a distraction to the subjects! 'detached view-point' where the story was concerned, and made response to the questions more difficult for them. All the image questions will thus be changed to a format similar to the following; "Who (might/would/was) the man looking at?"

## THE ETHICAL REASONING INVENTORY

### HISTORY AND VALIDATION

The ERI is an objective measure of the moral reasoning ability of the subject. It is based on the Moral Judgement Inventory as developed by Lawrence Kohlberg. The ERI uses many of the questions developed for the MJI and then requires that the subject choose between a number of alternative responses; choosing the one which comes closest to his/her way of thinking.

The ERI was written by J. Bode and R. Page (1978). Its internal consistency has been analyzed and reported (Kuhnicker, Meutkowski and Erickson; 1980) using item by

item correlation and resulting in Cronback alpha scores of .69 to .97. Temporal stability was studied on test-retest reliability for several time periods resulting in Pearson product-moment correlations ranging from .69 to .80 (K,M,&E;1980). The overall correlation between ERI scores and MJI scores on several study samples used by Bode and Page was  $r = .56$  (K,M,&E; 1980). In a further study (Bode and Page, 1979b) ERI and MJI scores correlated at  $r = .39$  ( $p/.001$ ). In the same report, Bode and Page state that the ERI can be used successfully with subjects as young as fourteen years. Although research has shown that it is possible for subjects to fake a lower score, subjects have not been able to fake a higher score (Bode and Page, 1979a).

As was the case in Bode and Page's studies, scores in the present study are averages of the score values obtained by each subject on the twenty-six items of the ERI.

#### ADMINISTRATION

In order to ascertain whether the ERI scores attained by the subjects were effected by the learning style preference (since the reading required by the traditional administration method for the ERI would favour verbal learners) subjects were randomly placed in two administration groups. In each case, the experimenter, after discussing the instructions, read either the first half or the second half of the ERI to the students.

The experimenter reminded the subjects that due to the possibility that they might choose the response which the experimenter emphasized the most, all responses would be emphasized in various ways. They were reminded that they must choose the response most appropriate for them; not the one

which seems right just because it was read in a certain way. The experimenter also sat out of the line of vision of the subject to avoid visual contact and its associated cues related to the experimenter's own personal attitudes toward the situations described. The experimenter read the appropriate section, depending on the subject's designated grouping, and according to the subject's response to each specific option question. The subject was allowed to read along as the experimenter read each section and the subject was asked to record his/her responses on an answer sheet. As well as recording their response to the ERI alternatives, the subjects were also asked to review the reasoning alternatives which they chose as being the most similar to their own form of reasoning, and to choose the one most important word in that alternative. These words became the basis for the affect score, to be discussed later.

There were few problems with the administration of the ERI. Although some subjects required clarification on the use of the answer sheet, none had such trouble as to confuse the data. Some forgot to mark certain sections but the assistant, in reviewing their response sheets, requested that they complete the missing sections.

#### DATA SUMMARY

In order to analyze the effect on the scores of experimenter-read as opposed to subject-read segments, the scores of the read and non-read sections of the ERI for each subject were summed and averaged separately. Each subject's overall score (summed and averaged over all twenty-six items) was also recorded.

## ANALYSIS OF EXPERIMENTER-READ EFFECT

It had been hypothesized that reading the ERI to the subjects would approve the scores attained by the visualizers since reading the ERI themselves would favour the verbalizers (Brook, 1968). However, both groups improved their scores when the experimenter read the ERI while the subject looked on in his own copy. This result could be explained as being due to the enhancement of comprehension involved in what was essentially a dual-coding situation. Beyond this, however, the verbalizers' improvement in score was thirty-four percent higher than that of the visualizers. There are several possibilities as to why this might occur. The proportion of general course students and the proportion of males was higher in the verbal category. Since these students are traditionally less capable, especially at reading and comprehending what they read (in spite of their verbal code dominance), their quantitative improvement could still be explained as a comprehension factor. It could also be an attention factor as well.

However, the improvement in score was significant for neither the verbal over the visual subjects ( $t=.90$ ) nor overall based on the read versus non-read section scores ( $t=1.375$ ). In summary, the results did not fit the hypothesis. It would seem that the visual detriment in the subject-read situation is not an important factor, at least at this age.

Let us look more closely at the comprehension and attention factor. The improvement on both sides implies that neither group was assisted to the other group's detriment.

This study requires the accurate representation of the ethical reasoning of the subjects. One specific example would focus on the point here. One male, general course student achieved an ERI score of 4.111 on the section which I read and an ERI score of 2.647 on the section he read himself. In my opinion, the 4.111 score is a more accurate estimate of his ethical reasoning, and the 2.647 score is a more accurate estimate of his reading ability. This study is not interested in reading ability.

As a result, in the formal study, the entire ERI will be read to the subjects. The text will be taped using dual tape recorders in order to provide synchronized presentation of either option in the option questions. Each administration will require one hour and fifteen minutes, and every subject will hear the same interpretation of the text.

#### POSITIVE AFFECT SCORE

#### COMPOSITION

As mentioned above, as subjects completed each item of the ERI, they were asked to review their chosen reasoning alternative and to choose the one most important word in that alternative. Subjects listed these words on their ERI answer sheet. These words then became the basis of the positive affect score.

A list was compiled of all those words which were chosen at least twice by the thirty subjects in the study. This list of one hundred thirty-eight words was then put together into the measure included in the appendix. Each word was listed

with a scale composed of a negative sign, seven dashes and a positive sign; all bracketed and all scales being identical in size.

#### ADMINISTRATION

At a second session approximately one week after the initial administration sessions, subjects were asked to complete the positive affect measure. It was group administered. The subjects were asked to look at each word on the list, one at a time, and to quickly mark the associated scale according to how positive the word makes them feel. It was explained to the subjects that their first impression was what was important and that this was the reason why they were asked to work quickly.

#### ANALYSIS OF DATA

The completed forms were analyzed in the following manner. Each student response was given a numerical value ranging from negative three if the student's mark was closest to the dash next to the negative sign. Each successive dash thus represents a value one higher than the last to a high positive score of positive three. Each word's affect score thus became the sum of the values given it by the thirty subjects (positive subtract negative) and the resulting assigned values ranged from negative seventy-nine for the words 'suffering' and 'jail' to positive eighty-seven for the word 'love'.

The experimenter then returned to the list of words originally chosen by each subject on their ERI score sheets and replaced each word on the list with the appropriate numerical value. Any word chosen by only one subject was given an arbitrary value of zero which implied that they would

have had no marked affect value to the group if they had been used in the sample.

The subject's affect score became the total of the separate word values (positive subtract negative) divided by the number of words each subject chose (that is, twenty-six). Their affect score is the average affect value of the words the subject chose.

#### ANALYSIS OF INSTRUMENT

As with the ERI score sheet, the word choice posed no problem for the subjects. In the analysis of the value ascribed to the words, there was no problem other than the sheer mechanics of computation.

There was one problem. By using only those words that were chosen at least twice, certain subjects' affect scores were computed on a data base of as low as nineteen out of a possible twenty-six values, simply due to the 'uncharacteristic' importance they placed on 'unconventional' words. As a result of the short administration time required to complete the 'good feeling' analysis of the words, I intend to include all and any words chosen by the subjects involved in the formal study. This change will provide more complete data upon which to base conclusions.

#### PROSE PASSAGE RECALL TEST

##### HISTORY AND VALIDATION

This test has been used by Riding and Calvey in several studies to confirm the validity of the Verbal/Image Code Test (Riding and Calvey; 1980, 1981). It consists of four prose passages each followed immediately by fifteen recall

questions. The passages range from one "highly visually descriptive with many similes and metaphors" through two moderate passages to a fourth which was "highly semantic and accoustic having many accoustically complex and unfamilliar names and few visual details". (Riding and Calvey, 1981, p61).

In their studies they found that eleven year old (R&C;1981) and twelve year old (R&C;1980) subjects who were designated as visualizers had significantly better recall scores on the highly descriptive passages than did verbalizers and that the reverse was true on the accoustic passage.

In the present study, the passages were taped and each was followed immediately by the appropriate recall questions. The questions were also taped and a ten second period of silence followed each question. The test was administered to the subjects in four groups depending on when their spares were slotted during the day.

The results in the present study were inconsistent with Riding and Calvey's results. In this analysis, only those subjects beyond one standard deviation of the mean were included, leaving five subjects in the verbal group and three subjects in the image group. Both groups did better on the descriptive passages than on the accoustic. The verbalizers did much better on the descriptive passages than the imagers. There was little difference on the scores on the accoustic passages.

There are many factors which preclude any conclusions about these results. In the first place R&C used samples of equal numbers of males and females, in this study, girls outnumber boys two to one. R&C used sample sizes of two hundred

fourteen and eighty, whereas this study involved thirty subjects. Further, the age differences; involving predominantly concrete operational eleven and twelve year olds in R&C's studies, and formal/concrete operational sixteen year olds in this study.

Riding and Calvey do not include in either of their reports (1980,1981) any mention of either specific instructions given to the subjects prior to administration or standards and conventions to be followed when correcting the answers.

There were also problems in the present study with regard to the students' trading of answers, which would invalidate the results of at least three subjects.

Revisions in sample size and composition should alter the results of the formal study, as will a discussion of the invalidating effect of trading answers.

With regard to standards of correction, students will be asked to answer each question in full detail and time will be allowed for each student to answer to their satisfaction. This can be done simply by using a remote switch to turn the tape deck on and off at the appropriate time. Once this provision has been implemented, the correcting convention will state that an answer will be deemed correct only if all appropriate details mentioned in the text are included in the answer.

Some of the questions asked in R&C's recall test are vague to the point of having no distinct answer. These questions will be replaced with questions with a definable answer.

These changes should successfully answer the problems encountered in the study.

## HYPOTHESES / PILOT RESULTS / PROPOSED STUDY HYPOTHESES

## PILOT HYPOTHESIS #1

"Subjects near the center of the verbal/image continuum will achieve higher scores on the Ethical Reasoning Inventory than those subjects at the extreme ends of the continuum."

Initial analysis of the data provided no information to support the hypothesis. Pictorial graphing of the relationship, however, led to a reformulation of the null hypothesis (see graph on page eighteen 'a').

Revised Null Hypothesis: There is no significant difference between ambi-modal (those who use both learning modes with relatively equal facility) and extreme mode learning style subjects on ERI score.

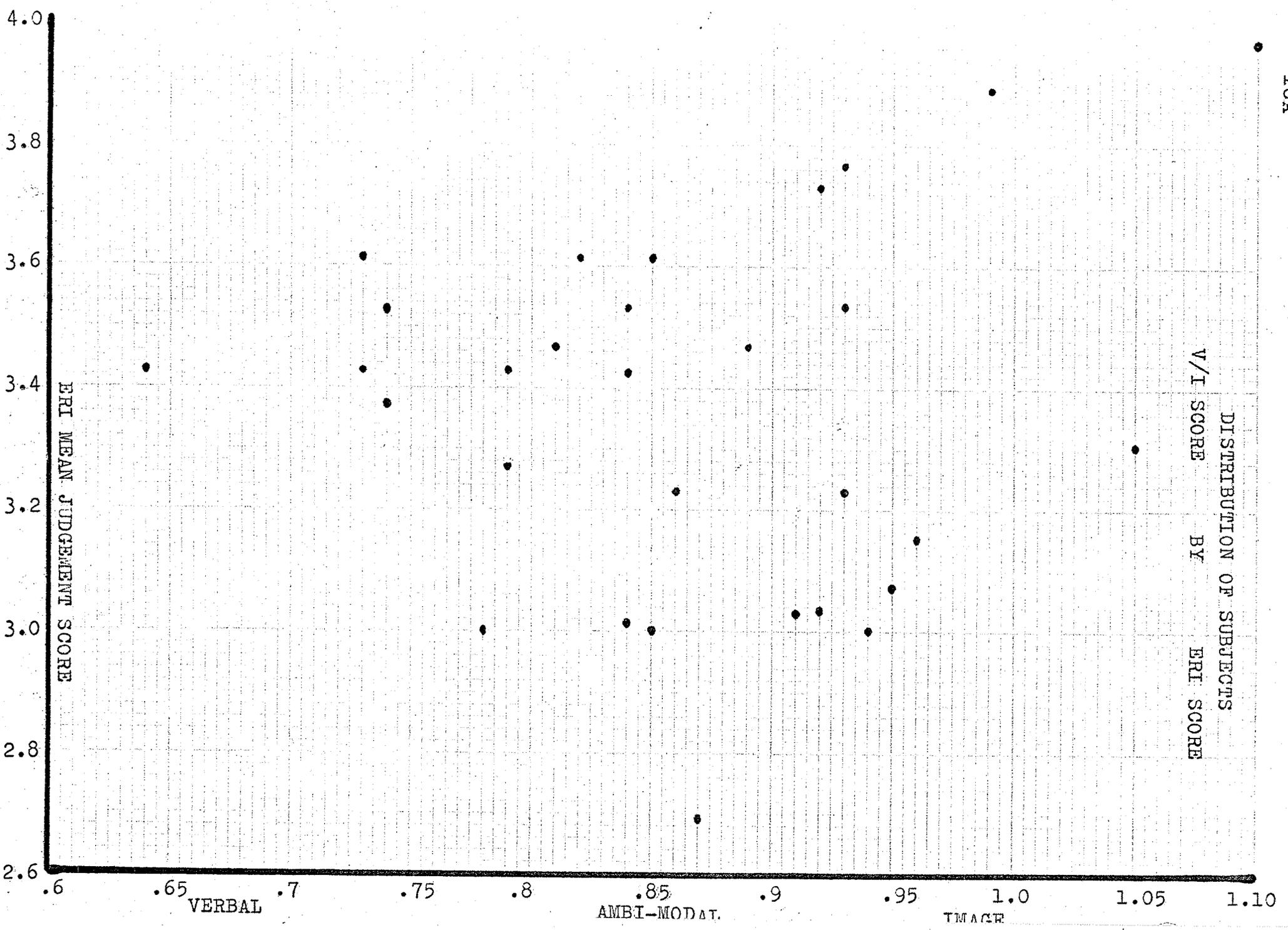
Those subjects classified as extreme were those whose V/I Code Test scores were more than one standard deviation away from the mean. This resulted in a sample split of seven subjects in the extreme sample and twenty-three subjects in the ambi-modal sample. A t-test was used to analyze the data and the resulting t value of 2.28 proved to be significant at the .05 level. As a result, the hypothesis for the formal study will be revised as follows.

## STUDY HYPOTHESIS #1

"Ambi-modal subjects will achieve lower scores on the Ethical Reasoning Inventory than will those subjects at the extreme ends of the verbal/image continuum."

In justification of this hypothesis, it would seem that those subjects whose coding systems favour one mode of thought over the other (in the extreme), are more often faced with conceptualizations which are extremely different from their own.

DISTRIBUTION OF SUBJECTS  
BY V/I SCORE  
AND ERI SCORE



Those ambi-modal subjects whose coding systems admit equal facility in both modes, are never confronted with conceptualizations which appear violently unfamiliar.

In a Piagetian sense, these ambi-modal subjects expend less effort accommodating to the conceptualizations of others. This 'lack of need' to grapple with divergent conceptualizations would perhaps provide less incentive to develop or assimilate more complex forms of ethical reasoning. The extreme modal thinkers require this effort, must grapple with divergent conceptualizations and thus have more incentive to develop and assimilate the more complex forms of ethical reasoning.

#### PILOT HYPOTHESIS #2

"Subjects in the verbally dominant grouping will score higher on the Ethical Reasoning Inventory than subjects in the image dominant grouping."

There were several related results concerning this hypothesis and the third. In analyzing the distribution of males and females along the V/I continuum, an analysis of the mean placement scores of each group found the female scores were higher. A  $t$  value of 1.5, although not significant, implies that females tend to be visualizers and males tend to be verbalizers. A similar analysis of the male/female distribution on ERI score found that the males had a higher score ( $t=.434$ , not significant). Thirdly, verbalizers also tend to have higher ERI scores ( $t=.468$ , not significant). Thus the hypothesis still stands.

#### STUDY HYPOTHESIS #2

"Subjects in the verbally dominant grouping will score

higher on the Ethical Reasoning Inventory than subjects in the image dominant grouping."

### PILOT HYPOTHESIS #3

"Subjects in the image dominant grouping will achieve higher scores on the Positive Affect Score than subjects in the verbal dominant grouping."

Although the specific statement of this hypothesis was not borne out in the pilot; in other words, verbalizers scored higher on the affect scale ( $t=.74$ ); it would appear that this was forced by radical data or outliers. Other aspects of the data seem to bear out the hypothesis as it stands. As discussed above, the females in the study tend to be visualizers ( $t=1.5$ ). The females in the study tend also tend to involve more positive affect in their decisions than did males ( $t=1.34$ ). The  $t$  values in each of these cases are not significant. In spite of this, the study hypothesis will remain the same as that for the pilot.

### STUDY HYPOTHESIS #3

"Subjects in the image dominant grouping will achieve higher scores on the Positive Affect Score than subjects in the verbal dominant grouping."

### PILOT HYPOTHESIS #4

"Subjects near the center of the verbal/image continuum will have higher scores on the word affect scale than subjects at the extreme ends of the continuum."

The specific statement that affect would decrease at the extremes does not seem to be borne out by the data since three of the highest affect scores involve V/I scorers in the extreme ends of the continuum (beyond one standard deviation

of the mean). The outlier factor, however, could influence this data as well.

Positive affect was reported to be correlated with higher ERI scores (Czapski, 1978). In the present study, positive affect and high ERI scores were correlated using the Pearson product-moment resulting in a highly significant correlation score of  $r=.98$ .

With this result and the implications of the revised first hypothesis, the positive affect involved with those subjects at the extreme ends of the continuum should also be higher than the positive affect involved with those subjects in the ambi-modal group. We thus revise the fourth hypothesis.

#### STUDY HYPOTHESIS#4

"Positive affect is associated with higher ERI scores. More specifically, ambi-modal subjects will achieve lower affect scores on the Positive Affect Scale than will those subjects at the extreme ends of the verbal/image continuum."

#### STUDY SAMPLE SELECTION

Due to the amount of time involved in administering the ERI as it is proposed, a large number of potential subjects will be screened and a sub-sample selected for the remainder of the study.

Between 120 and 150 subjects will be administered the Verbal/Image Code Test. Their V/I score will be computed. The size of this sample should result in at least twenty subjects scoring beyond one standard deviation of the mean at either end of the continuum.

The large sample will provide information on the

distribution of males and females in the verbal and image categories.

From this sample, three groups of twenty subjects will be chosen. They will be chosen as follows; ten each of males and females and within the ten, five each from the academic and general stream. The extreme groups will be chosen from those subjects scoring beyond one standard deviation of the mean on the V/I continuum. The ambi-modal group will be chosen randomly from within the sixty-eight percent who score within one standard deviation of the mean on the V/I continuum.

The subjects in this sample of sixty will be administered the remainder of the tests in the study and data analysis will be based on those results.

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This concludes the summary and analysis of the pilot study.

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PILOT STUDY

APPENDIX

ORDER OF DOCUMENTS

AUTHOR bracketed behind title if other than the experimenter.

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1. PERMISSION LETTER
2. SUBJECT TIME SCHEDULE AND INSTRUCTIONS
3. VERBAL/IMAGE CODE TEST
4. INDIVIDUAL SUBJECT DATA SHEET
5. ETHICAL REASONING INVENTORY - SAMPLE (Bode and Page)
6. ERI RESPONSE SHEET
7. POSITIVE AFFECT MEASURE & PROSE PASSAGE RECALL TEST  
RESPONSE SHEET
8. PROSE PASSAGES & RECALL TEST QUESTIONS (Riding and Calvey)
9. SUMMARY OF PILOT STUDY RESULTS

Box 1000  
Stonewall, Man.  
ROC 2Z0

# Stonewall Collegiate Institute

Office of the Principal

Principal  
B. W. Hendricks

Vice-Principal  
C. J. Campbell

Phone 467-5539  
467-5530

January 12, 1983

Dear Parent/Guardian,

Your son/daughter has expressed an interest in taking part in a study to find out how a person's learning style (visual or auditory) influences the way he/she thinks about right and wrong.

Mr. Al Thorleifson, a researcher from the University of Manitoba, will be conducting this study in Stonewall Collegiate during the week of January 17 - 21, 1983.

The study will require approximately an hour of each student's time and will involve a study period. At the conclusion of the study, Mr. Thorleifson will meet with the students and discuss the ideas involved in his research.

Before including your son/daughter in the study, I would appreciate your completion of the tear off portion below.

Yours truly,

-----  
I hereby give permission for \_\_\_\_\_  
to take part in this Learning Style/Ethical Judgement Study.

\_\_\_\_\_  
(Parent/Guardian Signature)

LEARNING STYLE/MORAL REASONING STUDY  
LIST OF PARTICIPANTS

VENUE \_\_\_\_\_

DATE TIME				
9:00				
9:40				
10:20				
10:20				
1:00				
1:40				
2:20				
2:20				

RESEARCHER'S  
SIGNATURE \_\_\_\_\_

LEARNING STYLES / MORAL REASONING

NOTICE TO PARTICIPANTS

1. If you are slated for 9:00, please report to room # \_\_\_\_\_ promptly at 9:00.
2. If you are slated for 1:00, please report to room # \_\_\_\_\_ promptly at 1:00.
3. All other participants will be paged by the secretary at the appropriate time.
4. If there are any problems or complications, please see me before 9:00 or at noon ; and as soon as possible after they come to your attention.

Thanks.

Al Thorleifson.

TEST OF IMAGE/VERBAL DOMINANCE  
JANUARY, 1983

Al Thorleifson  
Dept. of Educational Psychology  
Faculty of Education  
University of Manitoba

## INSTRUCTIONS

As you listen to this tape, you will hear a story about some of the things that happened while I was hitch-hiking in England this past summer. After each segment of the story, you will be asked a question. I will say the word 'question' when I am about to ask each one, so that you will be better prepared for it. The questions may seem strange or difficult since the information you will be asked for is not in the story text itself. You must answer the questions based on your own interpretation of the story. Since you will not be able to ask me to explain what the questions mean, you must answer on your own, to the best of your ability.

Before we begin, I'd like to thank you for taking part in this research project.

Al Thorleifson.

For three solid weeks the weather held hot and steamy. The hazy English sun baked the countryside, drying the hay crops and ripening the grain. The patchwork fields had begun to take on more contrasting colours, some still lime green, some turned to rich gold; dark green lines of thick hedge marched every which way between the crops. But the weather would not hold.

1. QUESTION: Does the word 'patchwork' mean that every field was the same?

It was the end of July and I was hitch-hiking out of Stratford-upon-Avon on the A439 under a mist-strafted sky that fogged the higher hills, enveloping their treed crowns in hoar. All colours had deepened and the early morning air held a dankness that left me feeling twisted within myself.

2.QUESTION: In this scene, what colour do you see most?

My fear of getting rain-soaked as I walked the roads was compounded by contrasting scents. Each time a lorry roared past me on the narrow road it's acrid exhaust choked me. The swirling exhaust would be replaced by the scent of new-mown hay.

3.QUESTION: What is a lorry?

Hitching is no easy occupation when the pavement is twelve feet wide and the hedges atop the stone walls on

either side of the road look as if a gardener has neatly trimmed them. In truth, the passing trucks whip the branches off as they careen down the winding roads.

4. QUESTION: How high is the hedge on the left side of the road?

I got used to ducking into blackthorn and fuchsia hedges whenever I knew that the trucks weren't going to stop. What I didn't get used to was the possibility of getting hit either by the truck itself or by the stench it left in its wake.

5. QUESTION: When it was used here, did 'wake' mean 'to wake up'?

That morning, however, there weren't so many vehicles. Too early, maybe; or else this A439 was not a truck route. The first ride I got was with a middle-aged couple in an Austin Mini. They were out for a drive. We stopped at a tree nursery and fresh fruit market settled amongst orchards of nearly ripe plums and pears.

6. QUESTION: How far is the fruit market from the road?

My grey-haired hostess decided to buy me a pound of plums and, not to be outdone, her husband decided he would buy coffee. Now, the beverage the English usually refer to as coffee has more of the insipid pungency of hot bog-water than the rich thickness of that wondrous liquor a

Canadian Icelander is used to.

7. QUESTION: Which word has a more negative meaning; 'insipid' or 'wondrous'?

As we sat in the coffee shop (the creamery house of the old dairy farm) balancing on plastic chairs which teetered precariously on the cracked and sloping floor, my host asked me where I was headed.

8. QUESTION: Does the floor slope toward the door, or away from the door?

I told him I was heading to South Wales and before I could continue, his face screwed up and he blurted,

"Huh. What do you want to do there? Nothing there but closed factories, soot, unemployment and pick-pockets."

9. QUESTION: What is the speaker doing with his hands?

I asked him politely where he would suggest I go instead. He thought I should head for the middle of Wales where the country was mountainous and, he would even say, beautiful. He waxed lyrical about the rugged beauty of the north-west coast.

10. QUESTION: What does the term 'to wax lyrical' mean?

He was successfully ignoring the comments of our

waitress, whom his wife was trying to console with pleading eyes. The willowy young woman, her stringy brown hair tied back in a pony tail, wiped wrinkled hands on her white mini-smock and pointedly stated that she came from south Wales and she thought it was very beautiful.

11. QUESTION: What colour are the waitress's eyes?

My host merely raised his voice, adopted a slightly more haughty air, and stated that the only good reason for anyone to go to South Wales would be to see how a country could be made ruinous and ugly by careless industrialization.

12. QUESTION: Who is the man looking at?

I kept my comments low-key and changed the subject (I was in no position to tell either of them they were wrong). Our coffee break concluded without event. The road to Evesham passes between orchards on both sides. When they left me on the main street of town, I wandered under a tall avenue of trees filling my face with plums that were just ripe, still with a twinge of sour near the stone.

13. QUESTION: Does 'twinge' mean the plums were very sour?

I walked south-west out of town to pass a picnic area along the river Avon and watched the fishermen with their long poles casting the shallows among the ducks and cat-tails.

5.

14. QUESTION: How many fishermen do you see?

Heading along the A44, I had already decided not to bother with the industrialized areas. I had been told by many people that unemployment made being held-up much more likely. It had taken little to convince me I should head for west Wales and thus avoid the south.

15. QUESTION: On what part of the road is the narrator walking?

A businessman on his lunch break drove me over the high open country to the circle where the M50 leaves the M5. I figured on taking a cut-off for Hereford once I was closer to the Welsh border and heading north-west that way, but luck changed that idea.

16. QUESTION: When the narrator is 'figuring', is he working with numbers?

My next ride; a young couple in a rickety Volvo stopped and asked if I wanted a ride to Port Talbot on the south coast of Wales. It's not often that one gets a ride as far as that (well over a hundred miles) and so I threw caution to chaos and got in.

17. QUESTION: Is a 'rickety Volvo' in good condition?

These two, a husband and wife, were teaching at a university in the Midlands. She, native-born Welsh, was glad to be coming home for a holiday. He; small, dark and bearded; spoke very little and with his brows knitted he listened intently to the sounds emanating from his finicky engine.

18. QUESTION: Is this man sitting straight up in his seat?

My first impression of the border country near Whitchurch was of hill country covered with spruce and pine. I had not seen country like this anywhere in England but it reminded me of the rugged Laurentian Shield country on the road between Vermillion Bay and Red Lake, Ontario.

19. QUESTION: Does 'rugged' have the same meaning as 'rough'?

I mentioned my surprise at the tree-covered hills and the young woman's face softened so that I could see her love of country. She mentioned almost reverently that it had been the wildness of the border country that had saved the Welsh from the English many times in the past.

20. QUESTION: Does 'reverently' mean the same as 'intently'?

---

Although the story does go on, we have come to the end of this Image/Verbal Dominance Test. I would like to thank you for your co-operation.

LEARNING STYLE / MORAL REASONING STUDY

NAME _____	AGE ____ / ____	SEX _____	CLASS _____
I/V TIMES	ERI SCORES	AFFECT WORD CHOICE	
1V _____	2/ 3 _____	_____	
2I _____	4/ 5 _____	_____	
3V _____	6/ 7 _____	_____	
4I _____	8/ 9 _____	_____	
5V _____	10/11 _____	_____	
6I _____	13/14 _____	_____	
7V _____	15 _____	_____	
8I _____	16 _____	_____	
9I _____	17 _____	_____	
10V _____	19/20 _____	_____	
11I _____	21/22 _____	_____	
12I _____	23 _____	_____	
13V _____	24 _____	_____	
14I _____	_____	_____	
15I _____	26/27 _____	_____	
16V _____	28/29 _____	_____	
17V _____	30/31 _____	_____	
18I _____	32/33 _____	_____	
19V _____	35/36 _____	_____	
20V _____	37 _____	_____	
	38 _____	_____	
Al Thorleifson	39 _____	_____	
108 - 50 Nassau	40 _____	_____	
Winnipeg, Manitoba	42/43 _____	_____	
Spring, 1983	44 _____	_____	
	45 _____	_____	
	46 _____	_____	

Ethical Reasoning Inventory

This questionnaire is composed of six stories and accompanying questions, followed by several possible reasons for an answer to each question. In each instance after reading the story, you are to answer the first question by checking the appropriate box on the answer sheet. Phrase one or two sentences in your mind that express the reason you answered the question as you did, then turn to the page indicated under the selected box, select the alternative from the list that is closest to the type of reasoning you would use in explaining your answer (checking its box on the answer sheet), then proceed to the remaining questions following the above steps. When finished with the questions and answers to the first story, go on to the remaining stories.

NOTE: Although in some cases none of the several alternatives will truly represent the type of reasoning you would use, choose that option which would be closest to your own reasoning. There are no right or wrong answers to any of these questions, although some may seem to be nonsense or irrelevant to the question posed.

In Europe, a woman was near death from a special kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that the druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to make. He paid \$200 for the radium and charged \$2,000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about \$1,000 which is half of what it cost. He told the druggist that his wife was dying, and asked him to sell it cheaper or let him pay later. But the druggist said, "No, I discovered the drug and I'm going to make money from it." So Heinz got desperate and broke into the man's store to steal the drug for his wife.

1. Should Heinz steal the drug?

yes

(if you checked "yes"  
turn to page 2)

no

(if you checked "no"  
turn to page 3)

answer: "yes" Why? (check the appropriate box)

Because human life is of infinite value and saving a life is of greater value than anything else. It would be right to steal to save a life if Heinz is willing to accept the legal consequences; it would be consistent with his own value system.

Because the drug did not cost much to manufacture anyway.

Because his wife's life is at stake; the husband is doing it out of love and the good intention of saving his wife's life--this is his only choice in a life and death situation. Although it may be wrong to steal, in this situation he's desperate in his desire to save his wife and it's excusable.

Because the essence of any decision making process involves the cognitive as well as affective components of the immediate situation.

Because the druggist was being greedy and 'ripping him off' so why shouldn't he rip the druggist off; besides, it is for a good reason: he wants his wife to live.

Because the universal value of human life far outweighs any consideration of man made laws; the value of life is a moral or logical precondition to the general value of property.

2. Which is worse, letting someone die or stealing?

letting someone die

stealing

(turn to page 4)

(turn to page 5)

answer: "no" Why? (check the appropriate box)

Because even though he's desperate he'd be wrong to steal; it would be dishonest and would break the law society has set.

Because you shouldn't steal even in a situation like that; he would just get into more trouble and could go to jail. There is no justification for stealing.

Because Heinz should try to find a way to get the drug legally and appeal to the druggist or somebody to understand his need and help him; although the druggist is wrong to charge so much, it is still wrong to steal because two wrongs don't make a right. Otherwise, his family would be ashamed of his actions.

Because the color of the drug may not be his wife's favorite color.

Because the inventor, in this case the druggist, deserves a profit for his discovery.

Because Heinz would lose respect for himself and the respect of the community; others may also be in great need of the drug.

2. Which is worse, letting someone die or stealing?

letting someone die

stealing

(turn to page 4)

(turn to page 5)

Name \_\_\_\_\_

AGE \_\_\_\_\_

SEX \_\_\_\_\_

WORD CHOICE

1 FIRST STORY \_\_\_yes \_\_\_no

2 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_letting someone die

3 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_stealing

4 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_yes

5 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_no

6 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_yes

7 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_no

8 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_sentence him

9 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_let him go

10 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

11 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

12 SECOND STORY \_\_\_yes \_\_\_no

13 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

14 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

15 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

16 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

17 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

18 THIRD STORY \_\_\_stealing like Karl \_\_\_cheating like Bob

19 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_the bank

20 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_the old man

21 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

22 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

23 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

24 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

(over)

25 FOURTH STORY \_\_\_yes \_\_\_no

26 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_yes

or

27 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_no

28 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_yes

or

29 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_no

30 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_yes

or

31 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6 \_\_\_no

32 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

or

33 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

34 FIFTH STORY \_\_\_yes, should tell \_\_\_no, shouldn't tell

35 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

or

36 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

37 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

38 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

39 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

40 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

41 SIXTH STORY \_\_\_yes \_\_\_no

42 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

or

43 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

44 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

45 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

46 \_\_\_1 \_\_\_2 \_\_\_3 \_\_\_4 \_\_\_5 \_\_\_6

AFFECT - WORD LIST

NAME \_\_\_\_\_

Directions - look at each word in turn and mark its scale indicating how positive a feeling it leaves you with. Work quickly - what you mark should be your first impression.

diminish	(- _ _ _ _ _ +)	correction	(- _ _ _ _ _ +)
replace	(- _ _ _ _ _ +)	benefit	(- _ _ _ _ _ +)
motive	(- _ _ _ _ _ +)	fair	(- _ _ _ _ _ +)
crime	(- _ _ _ _ _ +)	threaten	(- _ _ _ _ _ +)
respect	(- _ _ _ _ _ +)	believe	(- _ _ _ _ _ +)
illegal	(- _ _ _ _ _ +)	interest	(- _ _ _ _ _ +)
conscience	(- _ _ _ _ _ +)	self-guidance	(- _ _ _ _ _ +)
retaliatory	(- _ _ _ _ _ +)	unfair	(- _ _ _ _ _ +)
institution	(- _ _ _ _ _ +)	shatter	(- _ _ _ _ _ +)
share	(- _ _ _ _ _ +)	claim	(- _ _ _ _ _ +)
request	(- _ _ _ _ _ +)	violate	(- _ _ _ _ _ +)
independent	(- _ _ _ _ _ +)	jail	(- _ _ _ _ _ +)
circumstance	(- _ _ _ _ _ +)	confide	(- _ _ _ _ _ +)
reason	(- _ _ _ _ _ +)	personal	(- _ _ _ _ _ +)
sensitive	(- _ _ _ _ _ +)	love	(- _ _ _ _ _ +)
trust	(- _ _ _ _ _ +)	help	(- _ _ _ _ _ +)
worse	(- _ _ _ _ _ +)	precedence	(- _ _ _ _ _ +)
obedience	(- _ _ _ _ _ +)	hurt	(- _ _ _ _ _ +)
work	(- _ _ _ _ _ +)	punish	(- _ _ _ _ _ +)
honesty	(- _ _ _ _ _ +)	decision	(- _ _ _ _ _ +)
weakness	(- _ _ _ _ _ +)	risk	(- _ _ _ _ _ +)
law	(- _ _ _ _ _ +)	more	(- _ _ _ _ _ +)
anyone	(- _ _ _ _ _ +)	standard	(- _ _ _ _ _ +)
trouble	(- _ _ _ _ _ +)	responsibility	(- _ _ _ _ _ +)

example	(- _ _ _ _ _ _ _ +)	duty	(- _ _ _ _ _ _ _ +)
chaos	(- _ _ _ _ _ _ _ +)	mutual	(- _ _ _ _ _ _ _ +)
relationship	(- _ _ _ _ _ _ _ +)	chance	(- _ _ _ _ _ _ _ +)
earn	(- _ _ _ _ _ _ _ +)	desperate	(- _ _ _ _ _ _ _ +)
should	(- _ _ _ _ _ _ _ +)	possession	(- _ _ _ _ _ _ _ +)
rehabilitation	(- _ _ _ _ _ _ _ +)	guilt	(- _ _ _ _ _ _ _ +)
enough	(- _ _ _ _ _ _ _ +)	life	(- _ _ _ _ _ _ _ +)
feelings	(- _ _ _ _ _ _ _ +)	punishment	(- _ _ _ _ _ _ _ +)
appreciation	(- _ _ _ _ _ _ _ +)	hardship	(- _ _ _ _ _ _ _ +)
inconsistent	(- _ _ _ _ _ _ _ +)	people	(- _ _ _ _ _ _ _ +)
essential	(- _ _ _ _ _ _ _ +)	donating	(- _ _ _ _ _ _ _ +)
obligation	(- _ _ _ _ _ _ _ +)	right	(- _ _ _ _ _ _ _ +)
keep	(- _ _ _ _ _ _ _ +)	nothing	(- _ _ _ _ _ _ _ +)
good	(- _ _ _ _ _ _ _ +)	suffer	(- _ _ _ _ _ _ _ +)
open	(- _ _ _ _ _ _ _ +)	rational	(- _ _ _ _ _ _ _ +)
legitimate	(- _ _ _ _ _ _ _ +)	commitment	(- _ _ _ _ _ _ _ +)
promise	(- _ _ _ _ _ _ _ +)	disappointment	(- _ _ _ _ _ _ _ +)
her	(- _ _ _ _ _ _ _ +)	reform	(- _ _ _ _ _ _ _ +)
accept	(- _ _ _ _ _ _ _ +)	faith	(- _ _ _ _ _ _ _ +)
exception	(- _ _ _ _ _ _ _ +)	sacred	(- _ _ _ _ _ _ _ +)
state	(- _ _ _ _ _ _ _ +)	recognize	(- _ _ _ _ _ _ _ +)
better	(- _ _ _ _ _ _ _ +)	solution	(- _ _ _ _ _ _ _ +)
emotion	(- _ _ _ _ _ _ _ +)	support	(- _ _ _ _ _ _ _ +)
credibility	(- _ _ _ _ _ _ _ +)	account	(- _ _ _ _ _ _ _ +)
unjust	(- _ _ _ _ _ _ _ +)	faults	(- _ _ _ _ _ _ _ +)
infringe	(- _ _ _ _ _ _ _ +)	consider	(- _ _ _ _ _ _ _ +)
everyone	(- _ _ _ _ _ _ _ +)	other	(- _ _ _ _ _ _ _ +)
confidence	(- _ _ _ _ _ _ _ +)	property	(- _ _ _ _ _ _ _ +)

gain	(- _ _ _ _ _ +)	value	(- _ _ _ _ _ +)
person	(- _ _ _ _ _ +)	equal	(- _ _ _ _ _ +)
knew	(- _ _ _ _ _ +)	debt	(- _ _ _ _ _ +)
betray	(- _ _ _ _ _ +)	moral	(- _ _ _ _ _ +)
integrity	(- _ _ _ _ _ +)	deterrent	(- _ _ _ _ _ +)
same	(- _ _ _ _ _ +)	wrong	(- _ _ _ _ _ +)
business	(- _ _ _ _ _ +)	legal	(- _ _ _ _ _ +)
suffer	(- _ _ _ _ _ +)	pain	(- _ _ _ _ _ +)
cure	(- _ _ _ _ _ +)	precious	(- _ _ _ _ _ +)
understand	(- _ _ _ _ _ +)	harm	(- _ _ _ _ _ +)
justification	(- _ _ _ _ _ +)	preserve	(- _ _ _ _ _ +)
society	(- _ _ _ _ _ +)	loss	(- _ _ _ _ _ +)

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PROSE SELECTIONS

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_
- 6 \_\_\_\_\_
- 7 \_\_\_\_\_
- 8 \_\_\_\_\_
- 9 \_\_\_\_\_
- 10 \_\_\_\_\_
- 11 \_\_\_\_\_
- 12 \_\_\_\_\_
- 13 \_\_\_\_\_
- 14 \_\_\_\_\_
- 15 \_\_\_\_\_

PROSE SELECTION 2

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_
- 6 \_\_\_\_\_
- 7 \_\_\_\_\_
- 8 \_\_\_\_\_
- 9 \_\_\_\_\_
- 10 \_\_\_\_\_
- 11 \_\_\_\_\_
- 12 \_\_\_\_\_
- 13 \_\_\_\_\_
- 14 \_\_\_\_\_
- 15 \_\_\_\_\_

PROSE SELECTION 3

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_
- 6 \_\_\_\_\_
- 7 \_\_\_\_\_
- 8 \_\_\_\_\_
- 9 \_\_\_\_\_
- 10 \_\_\_\_\_
- 11 \_\_\_\_\_
- 12 \_\_\_\_\_
- 13 \_\_\_\_\_
- 14 \_\_\_\_\_

15

PROSE SELECTION 4

1

2

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1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

4 \_\_\_\_\_

THANKS

VERBAL-IMAGERY TEST MATERIALS

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Verbal-imagery Code Test.

A slightly modified extract from 'The Wind in the Willows' by Kenneth Grahame was divided into short paragraphs and a verbal (V) or imagery (I) question devised for each.

The Mole had been working very hard all the morning, spring cleaning his little home. First with brooms, then with dusters; then on ladders and steps and chairs, with a brush and a pail of whitewash; till he had dust in his throat and eyes, and splashes of whitewash over his black fur, and an aching back and weary arms. Spring was moving through the air above and in the earth below and around him, penetrating even his dark and lowly little house with its spirit of divine discontent and longing.

Question 1 (V): What are the four seasons of the year?

It was small wonder, then, that he suddenly flung down his brush on the floor, said 'Bother!' and 'O blow!' and also 'Hang spring-cleaning!' and he bolted out of the house without even waiting to put on his coat.

Question 2 (I): What colour was the brush?

Something up above was calling him imperiously, and he made for the steep little tunnel which in his case was the same as the gravelled carriage-drive owned by animals whose residences are nearer to the sun and air.

Question 3 (V): Is a carriage the same as a vehicle?

So he scraped and scratched and scabbled and scrooged, and then he scrooged again and scabbled and scratched and scaped, working busily with his little paws and muttering to himself, 'Up we go! Up we go!' till at last, pop! his snout came out into the sunlight, and he found himself rolling in the warm grass of a great meadow.

Question 4 (I): After he had rolled in the grass what did the grass look like?

'This is fine!' he said to himself. 'This is better than whitewashing!' The sunshine struck hot on his fur, soft breezes caressed his heated brow, and after the seclusion of the cellarage he had lived in for so long the carol of happy berds fell on his dulled hearing almost like a shout.

Question 5 (V): Is a carol the same as a song?

Jumping off all his four legs at once, in the joy of living and the daylight of spring without its cleaning, he pushed his way across the meadow till he reached the hedge on the further side.

Question 6 (V): Is spring cleaning the same as housework?

'Stop' said an elderly rabbit at the gap. 'Sixpence for the privilege of passing by on the private road!' He was bowled over at an instant by the impatient Mole, who trotted along the side of the road chaffing the other rabbits as they peeped hurriedly from their holes to see what the row was about.

Question 7 (I): What did the surface of the road look like?

'Onion Sauce! Onion sauce!' he remarked jeeringly, and was gone before they could think of a thoroughly satisfactory reply. They all started grumbling at each other. 'How stupid you are! Why didn't you tell him ——' 'Well, why didn't you say——?' 'You might have reminded him——' and so on, in the usual way; but of course it was then too late as is always the case.

Question 8 (V): How do we know the rabbits were arguing with each other?

It all seemed too good to be true. Hither and thither through the meadows he rambled busily, along the hedgerows and across the copses, finding everywhere birds building, flowers budding, leaves thrusting — everywhere happy, and progressive, and occupied.

Question 9 (I): What colour were the flowers in the meadows?

And instead of having an uneasy conscience pricking him and whispering 'Whitewash!' he somehow could only feel how jolly it was to be the only idle one among all these busy citizens. After all, the best part of a holiday is perhaps not so much to be resting yourself, as to see the other fellows busily working.

Question 10 (I): When he was feeling jolly what did he look like?

## Prose Passages and Recall Test Questions.

### Passage 1. Complex imagery.

The reindeer were the size of Shetland ponies, and their hair was as white as snowflakes. Their velvety, branching horns shone like brass, or like something on fire when the sunrise caught them. Their bright harness was of scarlet leather, as red as holly berries, and covered with bells. On the sledge, which moved like a swift dark shadow across the white snow, driving the deer, sat a fat little dwarf, dressed in polar bear's fur. He wore a hood that was as red as a robin's breast, with a long tassel hanging down from the point. His huge beard was like a white woollen blanket, and served him instead of a rug. Behind him, on an elevated seat, as though on a throne, in the middle of the sledge, sat a very different personage - a great lady, like a queen, taller than any woman that Edmund had ever seen. She was dressed in swan-white fur, and held a long golden staff in her right hand. She wore a crown on her head, and her face was white - not merely pale, but white like snow or paper or icing-sugar, except for her cherry-red mouth. It was a beautiful face in other respects, but as proud and cold as the moon on a frosty night.

Adapted from C. S. Lewis, 'The Lion, the Witch and the Wardrobe'.

### Recall Test Questions.

- (1) What were the reindeer's horns like?
- (2) What colour was their harness?
- (3) How did the sledge move across the snow?
- (4) Who was driving the sledge?
- (5) What were his clothes made of?
- (6) What was hanging down from the point of his hood?
- (7) Did he have a beard?
- (8) Who was behind him on the sledge?
- (9) Was she standing up in the sledge?
- (10) What was the boy's name?
- (11) What was the lady dressed in?
- (12) What was she holding in her hand?
- (13) What did she wear on her head?
- (14) What colour was her face?
- (15) What was the look on her face compared to?

### Passage 2. Moderate imagery.

The warm rain had done odd things to the herbaceous beds which bordered the walk by the lower wall. There were things sprouting and pushing out from the roots of the clumps of plants, and there were actually, here and there, glimpses of royal purple and saffron petals among the stems of crocuses. When Mary had reached the place where the door was concealed under the clinging ivy, she was startled by a curious loud sound. It was the caw-caw of a crow, and it came from the top of the wall, and when she looked up, there sat a plump, glossy-plumaged, blue-black bird, looking down at her very wisely indeed. She had never seen a crow so close before, and he made her distinctly nervous, but the next moment he spread his blue-black wings and flapped strongly across the garden. She hoped he was not going to linger inside, and she pushed the door open, wondering if he would. Shortly, when she had got into the garden, she saw that he probably did intend to linger, because he had alighted on a dwarf apple-tree, and under it crouched a little reddish animal with a bushy tail, and both of them were watching the stooping body of Dickon, who was quietly kneeling on the grass, working industriously.

Adapted from F. H. Burnett, 'The Secret Garden'.

Recall Test Questions.

- (1) What had the weather been like?
- (2) Name one of the colours that could be seen among the flowers.
- (3) What was the girl's name?
- (4) What hid the door to the garden?
- (5) What sound startled Mary?
- (6) Where did the sound come from?
- (7) What colour was the bird?
- (8) How was the bird looking at her?
- (9) How did she feel about the bird?
- (10) What did the bird do when she saw him?
- (11) Inside the garden what kind of tree was the bird sitting on?
- (12) What colour was the animal under the tree?
- (13) What kind of tail did the animal have?
- (14) What were the bird and the animal doing?
- (15) What was the gardener's name?

Passage 3. Moderate acoustic and semantic complexity.

As Hervard looked fondly at him, the boy Shorell, took hold of his hands, and gave his pledge in a clear voice: 'IC BECOM EOWR MAN'. These were the words of the oath spoken by a thane to his Saxon lord, words as old as the Saxon people themselves. They mean, 'I am you man'. Hervard spoke to his wife, 'He has been taught well, Bellora. I spoke these words of the oath to our chief years ago. Who has taught my son these Saxon words that please me so?' Bellora did not reply. Instead, the answer came from another woman, who had glided silently into the dim chamber, and now stood beside King Paresha, pale faced and smiling, holding in her delicate white hands a golden cross, which gleamed against the red silk of her robe. She wore a cloak, and silvery rings of pearls and rubies. 'I taught you son, Hervard,' she said, 'I, Jocasta, wife of King Paresha, taught Shorell, your son. A boy should learn how to speak the oath in his own Saxon tongue'. Then Hervard bowed humbly before Jocasta, and Shorell began to sing happily, because of his father's return. 'Lady,' said Hervard, 'Tell me that it is you who gave me back my family. Then I shall be you faithful follower.'

Adapted from Henry Treece, 'Man with a Sword'.

Recall Test Questions.

- (1) What was the name of the boy in the story?
- (2) What language did the boy speak?
- (3) What did the words mean that he spoke to his father?
- (4) Was Hervard pleased?
- (5) Hervard spoke to his wife, but who gave the reply?
- (6) What was the name of Hervard's wife?
- (7) What was the king's name?
- (8) What kind of room were they standing in?
- (9) What was the woman holding?
- (10) What was she wearing on her fingers?
- (11) What was her name?
- (12) What had she taught the boy?
- (13) What did Hervard do after the answer?
- (14) What did Shorell the boy do?
- (15) What did Hervard say to her at the end of the story?

Passage 4. Complex acoustic and semantic.

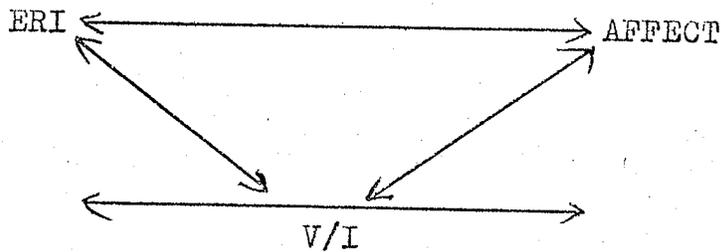
'My name', said the young girl, 'is Myagino, and I am the only daughter of Tsutsuzi Ga-oka, the son of Emi No-asakee, the son of Tempyohejee, the son of Yakushido Tisree, the son of Komy-ojee Tisroo, who was the son of the great god Kyoto. My father, Tsutsuzi Ga-oka, is lord of Ya-ha-ta and has the right to carry the sacred Kashimoro before the Tisroo himself (may he live for ever). My dear mother Abutsu (on whom be the peace of the great god Kyoto) is dead, and my father Tsutsuzi-Ga-oka has married another wife. One of my brothers has fallen in battle against the rebellious Torama-ansta in the east, and the other, Etsuji Ano, is a child. Now it came to pass that my father's new wife Toko-ku, hated me, and the sun appeared dark in her eyes because I was living in my father's house. So she urged my father to promise me in marriage to Xuru-ga Aku. Now this man, Xuru, is of base birth, though in these latter years he has won the favour of the Tisree (may he live for ever) by evil advice, and he is now a Tarkaan, and lord of the Gy-os-on, and is likely to be chosen as the Grand Vizier, when the present Vizier dies.

Adapted from C. S. Lewis, 'The Horse and his Boy'. All of the names were replaced by Japanese names.

Recall Test Questions.

- (1) Who was telling the story?
- (2) Did she have any sisters?
- (3) What was the name of the great god?
- (4) Was her father an ordinary man?
- (5) What did the girl say after the name Tisree in the story?
- (6) What happened to the girl's mother?
- (7) One of the girl's brothers was dead. How did he die?
- (8) What was her other brother?
- (9) What did the girl's stepmother feel about he?
- (10) How do we know that she felt that way?
- (11) What did the stepmother urge her father to do?
- (12) What position was held by the man she was promised in marriage to?
- (13) How had he gained favour from the Tisree?
- (14) What title was he likely to get in the future?
- (15) When was he likely to get this title?

SUMMARY OF RESULTS - PILOT STUDY



RESULTS - V/I CODING

VERBAL MODE

AMBIMODAL

IMAGE MODE

lower ERI scores

t=2.28

p .05

more males  
not significant

more females  
t= 1.5  
not significant

higher on ERI overall  
t= .468  
not significant

more OO students  
(females predominate in OO  
and in sample)

better ERI scores when  
experimenter reads  
t=.9  
not significant

more affect  
t= .74  
not significant

RESULTS - AFFECT

high affect / high ERI r = .93  
high affect / f over m t = 1.34 not significant  
high affect / verbalizers t = .743 not significant

RESULTS - ERI

ambimodal subjects / lower ERI t = 2.28 p .05  
verbalizers improve more than imagers when exp. reads t = .9  
not significant

## RESULTS - PROSE COMPREHENSION

- problems re sample.
  - problems re standards of correction.
  - problems re instructions.
  - problems re cheating.
  - no significant relationship to results obtained by Riding and Calvey (1981).
  - all subjects did better on descriptive as opposed to abstract selections.
- 

## REVISED HYPOTHESES FOR MAIN STUDY

1. Ambimodal subjects progress more slowly in ethical reasoning as defined by the ERI than do those at either extreme of the verbal/image continuum.  
\* those at the extremes must use their referential skills, to accommodate to and assimilate alternative forms of reasoning, to a much greater extent than ambimodal thinkers.
2. Visualizers will tend to use positive affect more consistently than verbalizers.
  - f - visualizers  $t = 1.5$
  - f - affect  $t = 1.34$
  - therefore visualizers - affect (contrary to pilot)
3. Verbalizers will tend to do better on the ERI.
  - m - verbalizers (as above)
  - m - higher ERI  $t = .434$
  - therefore verbalizers - higher ERI  $t = .468$
4. Affect associated with higher ERI scores.
  - $r = -.98$

FEBRUARY 5, 1983

Form and Content in Moral Development  
Research: cross-cultural Perspectives

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During the 1970's the work of Piaget and Kohlberg, their theory of developmental stages, and the conclusions which they have drawn based on that theory, have all been questioned as to their validity across cultures and to some extent even within cultures. At the very fundament, some have questioned whether their work is generalizable beyond the middle class, essentially male western samples which made up their subject pool. The development of a theory of developmental stages based on those samples has been questioned from both a psychological and from a philosophical point of view.

It will be my intention in this paper to analyze some of these arguments and from among the arguments to accept some as being more credible from my own perspective. I intend to discuss how these arguments require revisions in the theory as it stands and what aspects of the theory withstand the criticism. Due to the fact that Kohlberg's work depends upon the work done by Piaget, both Piaget's cognitive developmental approach and his work on moral development, my discussion will first focus on some of the challenges to Piaget's work, and from there to expand the discussion to Kohlberg's extension of Piaget's theory. The ultimate end, of course, is an analysis of the cross-cultural research on moral development in the light of the present state of the theory and an attempt to look to directions for future research.

### Form versus Content

The core of the controversy surrounding stage developmental theory is the argument over what constitutes form and what constitutes content. The various uses to which these terms have been put has led to much confusion. Although we will return to this controversy many times during the discussion, there are two points of view which to me seem most likely to resolve the argument, if not in belief, then at least by convention.

The first position is more of a psychological point of view. Levine (1979) defines form in any specific situation as follows: "we may define a formal environmental influence as one which manifests itself in the general cognitive abilities of persons and appears as a transituationally consistent property of their reasoning" (p. 228). Thus, to him, form is inherent in the type of reasoning attained by the specific actor or actors in any specific situation.

Content, on the other hand, "can be defined as sources of variation in moral reasoning which cannot be explained as a function of general cognitive abilities of persons." (p. 229) Levine states that these content effects can be either transituationally consistent as in the case of culturally accepted mores, and situation specific where the actor's behavior is guided by specific elements of the situation in which he finds himself.

The second point of view is raised by Buck-Morss (1975) in reference to the work of Georg Lukacs. Her summary of Lukacs' concepts focuses on two central premises in his work. The first states that the correlation between consciousness and society is a structural one; in terms of the position Levine takes, an element of content and not form. The second point, the one on which both Piaget and Kohlberg have been taken to task, is that abstract formalism is a content based structure which has become so ingrained in our Western consciousness and in our methods of economic organization (specifically the modes of production) that we assume this abstract formal structure to represent an apriori form rather than an element of cultural convention and thus a specific element of content in Levine's sense (Buck-Morss, p. 37). Lukacs' theories postulate an interrelationship between subjective and objective perspectives; an interrelationship between mind and society. Thus, the very theories which we propose as explanations of the "form of cognition" (Buck-Morss, p. 37) are in fact elements of social content.

In view of these conceptions of the form/content debate, what we must look for, in defining form, are those elements of experimental situations and their results which are independent of theories or situations which are not universally accepted across all cultures. We will be left with a "form" which describes those elements of development and cognition which are inately human and are undisturbed by cultural idiosyncracies.

#### Piaget and Cognitive/Cultural Bias

Piaget's cognitive developmental approach has been criticized by several writers. Buck-Morss (1975) has focused on what she calls a socio-economic bias. She believes that Piaget has blindly accepted abstract formalism and its economic production theories as being universal concepts - elements of form. She considers the cognitive developmental theory to be representative of a Kantian abstract formal theory and begins by suggesting that, to Piaget, the first cognitive step is an experience of alienation; to see a distinction between subject and object. She states that Piaget describes the ability to separate the mental image or concept from its actual empirical existence and sees this as a step toward making that object a product of thought rather than it being a socially produced result of interaction with the environment. She would prefer to have this interaction lead over many specific situations to a generalized convention, a commonly accepted definition or way of explaining the world.

She goes on to suggest that Piaget's theory allows that this thought object becomes a substitute for the thing itself and that the thought object "is granted greater cognitive value than the material object" (p. 40). Buck-Morss suggests that this is an idealist point of view which, although it eventually allows the child to imagine and comprehend an ever expanding and complex society, it also encourages a split between thinking and doing. She believes

that "For Piaget the culmination of learning is when the child can 'do' everything in his head, that is, when he can divorce theory from practice" (p. 41).

While this is, of course, a point of view which Levine would relegate to content, being a theory in itself, it does point out one of the problems which cross cultural researchers have come up against. Ashton (1975) discusses the conflicting results which have come out of studies of conservation skills. If we take Buck-Morss's position as a basis and consider that, as Berlyne (1965) suggests, the child can ignore the real object or content and can depend instead on the form of the situation, i.e. the thought element (note - this is not the Levine definition of form and content); it is easy to see that culturally specific conventions such as the laws of conservation of matter and energy could and have become accepted as aspects of universal form.

Piaget has postulated that conservation skills appear in a universal order (Ashton, p. 478). Ashton's paper questions this and Mangan (1978) goes so far as to point out that conservation skills are even a matter of convention, as for example, the acceptance of conservation of liquid volume in spite of such factors as evaporation and the water droplets which remain clinging to the walls of the "empty" container. The conservation skills as outlined by Piaget are elements of cultures, of social convention, and are thus elements of content.

Tests of formal operations which have been used across cultures have come up against similar problems. Mangan (1978) outlines one classic example. While an ordinary sorting task of a Piagetian type left a Puluwat confused, his ability to deal with all possible combinations of indigenous navigation knowledge in a systematic fashion also left the western experimenter confused (Gladwin, 1970).

What must be done then is to sort, in Levine's fashion, the elements of form from the elements of content. Whether the child's ability to abstract the mental image from the object itself is defined and explained in formal idealist terms or in interactionist dialectical terms, the fact still remains that when an object is hidden from him, there comes a point in the child's life when he knows to look for that object under, behind (or whatever) that which hides it. This point represents a developmental shift and thus will fit as an aspect of form in Levine's terms.

In a like manner, there comes a time in a child's life when he is capable of conservation skills. The type of conservation skills shown by the child will differ across cultures and within cultures depending upon the child's environment. The element of form which enters here is the ability to abstract within those culture bound systems and to realize the expected answer; the ability to work within cultural conventions. Similarly, the ability to abstract across levels and to extended interpretations of plausible hypothesis, the skill Piaget called formal operations, is still an element of form, whether it is expressed culturally in the paradigm of combinatorial logic or in that of oceanic navigational skills.

Thus, even when stripped of their cultural overlays, Piaget's cognitive developmental stages still stand as a genetic epistemological theory. The forms of each stage are cognitive in nature and apply to all cognitive functions. They represent a universal and invariant sequence of development. These stages form a hierarchy of functioning in the individual and each is a differentiation and integration of a set of functions present in the previous stage (Kohlberg and Kramer (1969), p. 99).

Moral Development - Philosophical Arguments

Once Piaget's theory of stage development can be seen as applicable across cultures, even though certain cultures may, due to their nature, leave certain higher skills latent; we can more reasonably turn to the work which Piaget has done on moral development and to Kohlberg's moral development (stage) theory.

Here, the field has been confused to an even greater extent. As was Piaget, Kohlberg has been chastised for being a formalist and a Kantian Idealist. This has not been his only problem, however. Many writers have also challenged the plausibility that his stages actually form a Piagetian developmental sequence.

Kohlberg postulated a three level theory of moral development roughly equivalent to Piaget's moral development concept of a progression from heteronomy through to autonomy (Piaget, 1965). Kohlberg's theory split each level into two stages. The preconventional level includes stage one with its justification of moral prescriptions or evaluations by appeal to an external and "higher" authority and to acknowledged physical consequences and literal features of an action. Also at the first level, stage two involves the justification of moral prescriptions or evaluations by appeal to the actor's pragmatic needs and instrumental intentions. This stage deals in functional reciprocity.

The second level, or conventional morality begins with stage three; justification of moral prescriptions or evaluations by appeal to shared interpersonal and characterological values. The fourth stage involves the "golden rule," societal point of view justifying moral prescriptions or evaluations by appeal to societal requirements and values.

It was with the inclusion of the third level in his theory that Kohlberg opened himself to extensive criticism (although the first four stages have not been exempt, as we shall see). Kohlberg's stage five sees justification of moral prescriptions or evaluations by appeal to social-contract rights, values and principles. Stage six justifies moral prescriptions or evaluations by appeal to the results of ideal role taking. The forms of the six stage definitions as they appear above are essentially those outlined by John Gibb in his 1977 critique of Kohlberg's theory.

Kohlberg's work has extended over more than twenty years. Through the use of longitudinal data, he soon found (Kohlberg and Kramer, 1969) that some of his western subjects who had shown stage five and six reasoning during high school appeared to regress to stage two during college and then to regain their former stage five and six levels by the time they were 25. At first he tended to accept this change as a functional regression caused by the turmoil of late-adolescent realization of moral relativity. He later rejected this (1973) and instead revised the stage definitions by hypothesizing a stage  $4\frac{1}{2}$  rather than stage two. He argued that although the college regressors appeared to be using stage two reasoning, their thought was more abstract and philosophical than that of younger subjects. This use of a 'level of discourse' argument allowed him to theorize that his college regressors were in the process of formulating a moral theory (K 1973, p. 192). Turiel (1974) defined this "theory" as a metaethical subjectivist relativism.

Kohlberg then revised his definition of stages three and four in an attempt to account for these adolescent stage five and six responses. He added A and B parts to each of stages 3 and 4 by including concepts of "universalized caring" in stages 3b and "concerts with ideal responsibility to contribute to a better society and with moral law" (Gibb, 1979, p. 93).

The problem he then faced was that his theory was no longer a child/adolescent stage theory since he had theoretically distinguished between adolescent principled thinkers and adult stage five and six subjects. He argued that whereas childhood developmental trends were aspects of social role-taking opportunities and their resulting cognitive shifts, adult perspectives assumed elements of metaethical reflection, personal choice and commitment (Gibb, 1979, p. 94).

This metaethical element, which runs throughout Kohlberg's work (outlined by Braun & Baribeau, 1978) has left him open to much criticism. Simpson (1974) questions the universality of his stage theory simply because he openly admitted that his higher levels were based on the philosophies of Kant. The assumption that the stages were apriori forms and that the normative thought involved in fact separated structure from its content becomes suspect when one realizes that the questions asked of subjects and the dilemmas involved in the interviews were in themselves expressions of concepts and dilemmas of interest specifically to westerners in the present time. As example, Braun & Baribeau (1978) discuss the varying interpretations possible for a concept such as the value of human life and they point out that even in the west moral decisions made regarding this concept may be made situationally.

The fact that these apriori universal principles are culturally specific is not Braun & Baribeau's only level of criticism. Braun & Baribeau, once they have outlined the formalism inherent in Kohlberg's theory, then proceed to outline four reasons why exclusive dependence upon this subjective idealist Kantian perspective, as they say, "imperils the theory of moral development" (Braun and Baribeau, 1978, p. 295). First, the dependence upon formal abstraction (from concrete to functional to abstract) leaves alien the element of

moral conviction and the relationship of imagery, affect and character to moral action. Secondly, Kohlberg admits his theory does not explain the lack of relationship between thought and action. The third problem was mentioned above, the culture and era-specific nature of moral dilemmas. The fourth problem Braun & Baribeau outline is Kohlberg's dependence upon verbal responses. They see this verbalization of verbal abstractions as an alienation of the actor from his world (Braun & Baribeau, 1978, p. 295-96).

These criticisms go beyond the criticism of theory itself. They point to the same cultural content problem, which Kohlberg interpreted as form, as was brought to bear against Piaget. They reject the post-conventional stages as ethnocentric and lead the reader to question the validity of the stage theory itself.

Gibb (1975), however, had already provided an outline of an alternative interpretation of Kohlberg's theory. He removes the post-conventional level from the developmental sequence and describes it as evidence of an existential, internal, reflective process which although it has its beginnings in late adolescence (and would thus account for the stage five and six responses of adolescents) does not come into common use until adulthood (if ever). This reformulation is justifiable in that although stage five responses are found, they are found in a relatively few subjects; and in that stage six subjects are extremely rare. These metaethical or existential responses are, according to Gibb, representative of the height of Western philosophical reasoning and cannot be seen as culturally universal.

Gibb does, however, accept the first four stages as forming a Piagetian stage sequence. To begin, I would assert that before accepting the position, we must again assume Levine's concept of form versus content. We must reject any assumption that the interview situation provides any and all aspects

of moral development a forum for display. The moral dilemmas must be accepted as culture and era-bound and their interpretation must be seen as relative to the situations in which they are used. The dilemmas and the subjects may interact in ways such that no clear interpretation of their individual effects is possible.

Looking then at the stages in terms of cognitive form and as separate from their content, how well do Kohlberg's stages fit Piaget's stage criteria? First, with regard to their generality, the specific concept structures found in the responses given in interview situations tend to fit within the defined stage criteria. There is some problem in that the responses given by a specific subject over the entire interview may represent several stage categories, but in most instances, there is one modal stage within which the majority of the responses fit. Gibb also reports that there is concurrence between the moral stages and other related stage series, specifically social perspective taking and logical operations (Gibb, 1977, p. 48) Gibb also reports numerous studies which support the stages' upward directionality and stability. This has usually been tested by attempts to destabilize the modal responses by introducing subjects to sample responses from stages just below and just above the modal stage. Although responses have been lowered on the short term, the only stable changes have been in the direction of the next higher stage.

The third criteria involves the assumption that "rich" environments will stimulate moral growth. Gibb presents evidence supporting this concept and cross cultural data to be discussed later further corroborates this. The Piagetian concept of equilibration is constantly brought into the literature in parallel with the "rich environment" concept. The consecutive sequence requirement is again supported in both the "within-cultural" and the cross-cultural literature. The exclusion of the post-conventional stages

from the discussion is a must, however, since the sequential corroboration is consistent only for stages one through four.

The fifth category leads us into the cross-cultural arena. Is there evidence for the species-wide generalizability of Kohlberg's first four stages. During the past ten years a number of studies have been completed which support the generalizability of Kohlberg's theory. These are based, for the most part, on the premise that to be generalizable, the Kohlbergian system must provide evidence of generality, upward directionality, "rich environment" effect and sequentiality in a wide variety of cultures. To date, published studies have provided this corroboration in the Bahamas (White et al 1977, White 1975), in Brazil (Briaggio, 1976), in the Caribbean (Gorsuch, 1973), in India (Parikh, 1980), in an Israeli/Soviet comparison (Ziv et al 1975), in Kenya (Edwards, 1975, 1978), in Negro/White comparisons (Fodor, 1969), in Nigeria (Maqsud, 1978), and in Turkey (Turiel et al, 1978).

The slate, however, is not clear. In 1979, Maqsud reported research conducted in Nigeria in which subjects exhibited a marked plus 2 shift in stage, virtually never recording stage three reasoning. This shift directly from instrumental moral reasoning to obligatory moral thinking, according to Maqsud was probably due to the duty bound nature of Koranic obligations in a Muslim community. Maqsud suggests that religious values and cultural expectations can play a vital role in socialization. The question remains: is Kohlberg's stage three skipped or culturally masked?

In 1980, Maqsud again questions Kohlbergian universality. He made the assumption that the sequential order invariance would correlate with an expected decrease in external orientation in locus of control with transition from lower to higher stages of moral reasoning. However, his results

found that the stage three subjects with their need for trust and social approval were far more internal than those subjects in stages one, two, or four. His conclusion was that judgements of utility in interpersonal relationships, so prevalent in a stage three perspective, tend to promote the development of initiative and self-reliance. A further study (Maqsd, 1980) led him to conclude that Kohlberg's moral judgement stages had no relevance to feelings of being in control, self-confidence, or dogmatism. He reiterated the criticism stated by Braun & Baribeau that moral judgement as outlined by Kohlberg has no necessary link to moral behaviour.

In spite of the largely favourable results of cross-cultural research, there are, therefore, dissenting opinions. The formalist position which Kohlberg's work has taken still cannot encompass all phenomena in the cross-cultural theatre. There is, however, a second position which, while still content in Lukacs' theory, is somewhat more open to various options.

Although I could not begin within the scope of this paper to analyze dialectical logic in detail, there are specific aspects of it which can easily be included in a broadening of the moral development field. I will discuss these concepts with specific reference to some of the cross-cultural research which has been carried out over the last decade.

The dialectical approach (Braun & Baribeau) and the cultural relativist position (Buck-Morss) are different names for essentially the same position. What they are seeking is a logic for "content composed of interactions of opposed elements passing into each other" (Braun & Baribeau, p. 294). In this materialist (as opposed to formalist) position, the thesis is the unity of content in natural (phenomenal) processes and thought processes. This Lukacs style position is not concerned with form in Levine's sense. In other words, we are not essentially concerned in a dialectical paradigm with attempts

to define the form or cognitive developmental aspect. Kohlberg's theory must stand to the side. The dialectical analysis of the phenomena in the environment expands the scope of the field beyond Kohlberg's theory. As with ethnographic research, in dialectical logic, the theory must follow. How, then, does the dialectical position expand the field of moral development research?

The first dialectical position is that thought proceeds from the environment and its transient elements or objects. This phenomenal reality becomes translated into the essential as internalized experience. The essential consists of generalizations and relationships in thought based on experience. Edwards (1975) based on her Kenyan research suggests that "Modes of moral judgement should be viewed as adaptive structures developed by people to accomplish important cognitive tasks at hand" (p. 525). In other words, they are a part of the generalization-from-experience process. Gorsuch et al (1973) reported the seeming inability of Carib youths to conceive of a non-collectivist response to a moral dilemma. In dialectical terms, this serves as an example of the cultural milieu as a phenomenal reality influencing the type of generalizations conceived of by members of the culture.

A similar example comes from Braggio's (1976) Brazilian research. In analyzing the high occurrence of stage three usage by her subjects as opposed to the United States prevalence of stage 4; she suggests the answer could be found in the affective propensity of Latins along with some lack of respect for the law, based on their phenomenal experiences with it.

In Maccoby and Modiano's (1969) report of rural versus urban Mexican subjects there is a stirring distinction made between the two groups. They found the urban group reported more stage four responses but found that this basis of theoretical thought led them to stereotyping behavior and overly formal reasoning. On the other hand, the rural subjects presented "a deeper

relatedness to (their) world, less alienated thought and a poetry of language and experience that is expressed in peasant concepts of love" (p. 31-2).

In each of these examples, although each group expressed Kohlbergian reasoning and similar stage development, what is important is not the cognitive form but the various cultural phenomena which led these subjects to their common generalization types.

The second element of the dialectical position is that "thought processes and the external world form a unity of opposites which pass one into the other and vice versa" (Braun & Baribeau, 1978, p. 294). The Piagetian concept of disequilibrium provides an example of this concept. Edwards, in her 1978 report of Kenyan students, suggested that those students who had attended an ethnically pluralistic secondary school tended to use stage four reasoning more often than did those in a non-pluralistic system because meeting others, whose reasoning structures and culture differs from theirs, allows them to realize that their own culture is guided by rules and rights and obligations. The disequilibrium caused by these required accommodations leads the students to realize that morality is essentially a system of rules.

The third dialectical concept involves the ever present awareness of a person that where he is now is ultimately a result of where he has been. In other words, it is a person's history which allows him to remove himself from his immediate sensations. It allows him perspective. Sinha (1977) in his analysis of the values held by Indian youths states that it is presently a problem that the models of Indian youth are not among the great of the past. He concludes that "a mature psychological identity presupposes a subjective sense of continuous existence and a coherent memory. It is anchored in the past and at the same time links itself to the future." (p. 246)

The fourth dialectical position is as mentioned above. The ethnographer brings no hypotheses with him but instead immerses himself in content and deals with the concrete aspect of each situation. Once the concrete is fully apprehended, the researcher tends to regress through abstractive investigation to the less developed forms, through formulation of hypotheses and the experimental resolution of their questions. Using this method, repeatedly if necessary, it becomes possible to retrace the progress of the researcher's understanding by means of a synthetic build up from the research results to a concrete whole, a unitive conception of the situation presented in the full complexity of its internal relations (Braun and Baribeau, 1978).

#### Summary

Kohlberg's work is abstract and formalist. It is specific in that it deals in analysis of the ontogenetic particularities of moral reasoning. As a stage developmental theory, although still incomplete, Gibbs (1977) analysis and reconstruction of Kohlberg's concepts appears to stand independent of the criticisms laid upon the earlier forms of the theory. If the theory of form, as Levine defines it, is applied to Kohlberg's moral stages and the cultural peculiarities of its usually understood format are relegated to the world of content, as Lukacs formulated it, then perhaps Kohlberg can in truth say that his Moral Development Theory represents an outline of the structure of cognitive moral reasoning.

With these provisos, it becomes obvious that Kohlberg's theory is of limited scope. There are many aspects of the field of ethics and morality which his theory does not consider. To truly understand the nature of morality in all its aspects we must broaden our scope. Simpson (1974, p. 100), commending on Kohlberg's cross-cultural research, supports the legitimacy of other sources of authority besides those used by science = including faith

and belief stemming from personal, intuitive and inner knowledge. In order to begin to understand the myriad aspects and possible interpretations interacting in energy moral dilemma or situation, we must look to more of an ethnographic approach. The dialectical concept of many simultaneously acting factors producing a specific main effect provides another analogy.

This final analogy must reaffirm that neither a dialectical approach nor a formalist approach can be used to the other's exclusion. Each must work with the other, each serving to catalyze the other and through that interaction to produce a main effect: the expansion of knowledge of moral development, species wide, in all its many facets.

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