INVESTIGATION OF THE CONTENT
OF BRIEF SAMPLES OF WRITING
OF HIGH SCHOOL STUDENTS

By

JOSEPH BALASA

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Department of Educational Psychology and Special Education

The University of British Columbia
1956 Main Mall
Vancouver, Canada
V6T 1Y3

Date October 11, 1983
ABSTRACT

Brief written samples of high school students (83 grade 11 and 12) were content analyzed for the preferential use of verbs, nouns or adjectives. Consistency of preference across time (7 - 10 days) and testing mode word lists versus short prose passage was assessed. For 14 subjects (5 noun, 5 verb, 4 adjective dominant), the Gottschalk Human Relations Scale scoring was used to determine the magnitude of emotions associated with the dominant use of verbs, nouns and adjectives.

The results indicated that the majority of the students preferred the noun dominant response mode. Verb dominant students comprised a smaller group, while very few students preferred the adjective dominant response mode.

Expressed preference for the dominant response mode was found to be highly stable over time and consistent across the testing mode. Students did not significantly alter their dominant response mode even when they were requested to alter their original views and "take a totally different stand."

The Gottschalk Human Relations Scale scores indicated that for the 14 subjects participating in the analysis, the noun dominant group displayed the greatest variance in the magnitude of emotions. The highest absolute magnitudes of emotion were associated with the adjective dominant response mode. Verb dominant students displayed high and stable emotional magnitudes.
The results of the present study are examined in view of possible educational and therapeutic implications, and suggestions regarding future research are made.

Supervisor
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CHAPTER I
INTRODUCTION

Personality is expressed through the particular foci it maintains. These foci in turn are characterized by the specific responses produced by the individual in relation to the physical and psychological stimuli. The responses in turn form patterns about which one is at least potentially conscious. In this way awareness is not an uninterrupted, complete or continuous process, but rather a fluctuating one between aspects of the outer (physical) and the inner (psychological) environments.

Hebb (1949) proposed that the individual functions by utilizing a "frame of reference" which continuously stimulates the inner environment of the individual by selectively limiting processing of external stimuli.

Argyris (1976), researching individual decision making, found that individuals hold "micro theories of action" which they use in decision making. Yet, he also found that people espouse certain theories of action and claim to use those theories in their decisions, but, in fact, they use another set of theories to decide on their actions. Further, individuals are completely unaware of this process.

Linguistic responses are considered by many researchers as representative of the interaction of the physical and psychological environments. Paivio (1963), Lambert & Paivio (1956) note the relation between language and the ability to learn to memorize words in particular sequences.
Gottschalk & Gleser (1969) view language as a variety of learned human behaviour, which can be used to indicate the emotional and cognitive dispositions of individuals.

West & Foster (1976, p. 57) emphasize the relation of parts of speech to particular internal conditions or "states" of the individual. They note the characteristics of nouns as symbols for "historical reality."

Anderson (1975, p. 183), examining the nature of language, notes that the real power of language is in its prepositional nature. Prepositions in their most primitive and concrete form seem to be a special kind of pattern indicative of relations to some patterns in the non-verbal system. The non-verbal world is represented through classes of words. Nouns represent things, prepositions represent static relations, while verbs represent changes.

Davitz & Davitz (1959) remarked that the communication of feelings is essentially a problem in discrimination and differentiation.

Considering the above, the individual, through producing and processing language, irrespective of whether its form is written or spoken, will perform in the logical or the emotional domains of his/her psychological environments. Since the stimuli perceived and processed will tend to fall into the two basic categories—logical with its ongoing experience process orientation and emotional with its tendency to differentiation—the individual will be faced with the task to produce language equivalents in order to present or to communicate his/her
psychological dispositions. Correspondingly, then, the nature of the language productions should be indicative of the dynamics of the particular domains of processing.

Considering the above, language production can be looked upon as having several objectives. As a cause, it can express the psychological interactions experienced by the individual regardless of the level of awareness or subconscious processes, while, as an effect, it communicates these processes to the outside world. Through this communication with the outside, physical world, special relationships can be formed and a "frame of reference" can be established (Hebb 1949). This frame of reference then is used to establish both the quantitative and qualitative aspects of the individual's rationality.

Since the language production of the individual is the result of various processes within the frame of reference, through a content analysis of the language output, written or spoken, it should be possible to determine, at least in part, the psychological states or experiences of the individual.

Undoubtedly, there are many ways content analysis can be approached, but for the purposes of this study, the lexical or verbal features of individual written language production will be examined. Here, content analysis is considered in terms of Holsti (1967), as quoted by Gottschalk et al (1969, p. 2), that "Content analysis is any technique for systematically and objectively identifying specified characteristics of messages."
Gottschalk and Gleser (1969) and Gottschalk et al (1969) designed an approach to content analysis which employs quantification as an important attribute of determining psychological states while, at the same time, attempts to distinguish qualitatively different emotions and subcategories of these emotions. They remark that the method of content analysis they propose also aims to analyze the latent deeper meanings embedded in the content.

A number of content analysis scales were developed by the above authors which measure such effects as hostility (inner and outer directed), social alienation, human relations, etc. The Gottschalk scales approach content analysis mainly on the basis of "molecular" (themes) level, but mention is made of computer assisted systems being developed where, for example, the hostility outward dimension is assessed only from verbs (Gottschalk, 1973).

Steingart et al (1979) and Freedman et al (1979), utilizing some of the content analysis scales proposed by Gottschalk, found significant relationships between body and hand movements, speech primacy and emotional states like overt and covert hostility. Steingart et al concluded that differences in how cognitive organization is revealed by communicative behaviour is linked to differences in anxiety expression. Thus, the function, and not necessarily the content of an emotional response, seems to influence the status of cognitive organization and, subsequently, behaviour.
Similar conclusions were made by Gottschalk and Uliana (1974) while studying the influence of such body movements as lip-touching. They found that some persons were influenced regarding the content of their thoughts by evoking memories of oral functions when lip-touching, whereas in other persons lip-touching appeared as a function of thoughts present in the cognitive structure.

Evidence suggests that through content analysis it is possible to distinguish between different emotional states, both qualitatively and quantitatively. Content analysis can also be related to physical movements and simultaneous speech production thus becoming indicative of the "frame of reference" which, according to Hebb (1949), influences the nature of processing of the individual and limits the perception of particular stimuli.
CHAPTER II
THE PROBLEM AND RELATED RESEARCH

In Chapter I, the concepts of content analysis were discussed and alternative approaches to content analysis were briefly mentioned. Procedures employed by a number of researchers suggest that content analysis is a significant tool in both psychological and educational settings. Chapter II consists of a discussion of the relevant research as it concerns this study; the purpose, rationale and objectives of the study are provided.

LITERATURE REVIEW

CONTENT - PSYCHOLOGICAL STATES

Buckminster Fuller (1981, p. 343) remarked that no human has ever sensed outside of self directly but only through nerve-related processes interpreted in the brain. He believed that, as a result of this outside-to-inward flow of sensing, patterns are created which, in turn, will manifest through unique behaviours. This seems to support Hebb's (1949) idea of a "frame of reference" both for processing and reproducing stimuli. The individual's frame of reference consists of six components: concepts, structures, affects, needs, values and interests. The six components act as a special screen for the processing of external stimuli and, thus, the individual interprets external stimuli in terms of the frame of reference. Thus, the frame of
reference assures selectivity in terms of the external stimulation of the individual. Some highly intense external stimuli are not screened out by this process. Individuals, on the other hand, usually ignore many visual, auditory and other potential stimuli (West & Foster, 1976, pp. 56-82).

Interaction of the external and internal stimuli initiates cognition and is demonstrated through some kind of behaviour.

Argyris (1976) indicated the "frame of reference" effects in the decision making process of the individual. Although explicitly he did not use the term, his remark that people seem to have "micro theories of action" which they use in decision making is not far removed from Hebb's idea of the "frame of reference" as discussed in educational terms by West & Foster (1976, Ch. 3).

Argyris investigated the decision making process in industrial environments by asking top management personnel to state goals and objectives in their particular fields and to describe processes (methods) by which to accomplish the stated objectives. The managers also had to indicate the concepts or theories they believed to employ in their decision making. Analyzing the responses, Argyris discovered that the managers were totally unaware of the fact that they utilized a different set of theories to arrive at their decisions than they stated (believed) they used. Further, they were unable to change even after extensive practice. Argyris offered the idea that most people are unaware that they develop two sets of theories for decision making: theories espoused which they believe are
used, and theories in use which, remarkably different than the espoused ones, they actually employ to arrive at a decision.

How the frame of reference in humanistic terms can operate is best indicated by Argyris' model of behaviour. Based on the above-mentioned experiments, Argyris concluded that two basic kinds of behaviour are produced in response to the experimental conditions he described.

**Model I Behaviour and Model II Behaviour**

Model I behaviour is characterized by the practice of human beings to react to the environment much the same as the thermostat reacts to the temperature of the room in which it is placed, then produce corrective reactions according to a set of micro-theories. These theories in use are very different from the theories believed to be utilized in the decision making. Human beings using Model I behaviour are unaware of the existence of the two sets of theories and when they become aware, they tend to be unable to change. This inability to change then becomes threatening to the point that it inhibits further learning. Thus, Model I, which is a particular example of the operation of the frame of reference, is a self-regulating cognitive process which is mainly going to result in maintenance of the already-accepted environment, as perceived by the individual. Argyris reported that out of 1,000 subjects tested from all walks of life, 95% of the individuals performed in this manner.
Model II behaviour is compared to a double-loop-learning process where the responses and behaviours displayed are under constant scrutiny and study for the purpose of avoiding "self-sealing" behavioural processes. In this model, the theories in use and the theories espoused are conscious units of cognitive functioning, and are predictive in nature rather than tradition seeking as in the case of Model I behavioural responses.

In social terms, the contents of human psychological functioning were described by Botkin et al (1979). Society and individuals typically employ the processes of maintenance or shock learning. This consists of producing traditional responses to the environment and learning through reaction to the events rather than anticipating them. In maintenance learning, great shocks are necessary to change the traditional reactive responses of societies or individuals. Model I behaviour seems to describe this state in a more operationalized way.

Model II behaviour has predictive elements and integrated processes for advanced learning. Botkin's concepts of anticipatory and participatory learning suggest similar approaches. Anticipation is the ability to foresee coming events and evaluate their effects. It requires not only learning from experience, but also experiencing envisioned situations. Anticipation is also the creation of new alternatives. Anticipation must be complemented by participation. Thus, the authors
(Botkin et al, 1979) stress that the process of anticipation is a mental activity, while participation is a social one. Participation is essential to any socially meaningful anticipation since more and more people use their talents to obstruct rather than to create due to the fact that they are not involved in the decision making, but feel required to perform according to decisions handed down to them. Model II behaviour describes these elements in operational terms and in terms of the individual decision making process.

Cognitive processes are seen as being created in the human mind in response to the external and internal perception of stimuli. Hebb's frame of reference is useful in approaching the idea of the initiation of these cognitive processes. Botkin et al (1979) suggest the cognitive structures utilized further to process stimuli, and thus to maintain the structures present by constantly adding to them. The relation of the content to the resulting psychological state is emphasized by pointing out the effects of particular types of stimuli (maintenance shock learning versus anticipatory/participatory learning). The authors reject traditional responses in favour of innovative expectations.

The content which is easy to identify in the cognitive structures described by Botkin et al (not to be understood as the only content) is the idea that traditional and innovative elements have different values, also, that innovative elements should become more important at present than traditional ones.
These are concepts according to Hebb which when processed will result in the formation of the cognitive structures, or, in other words, could be taken as indicators of the psychological states of the responding individual(s). Thus, the content gains relevance to the state (psychological) of the individual.

The nature of this psychological state of the individual is better indicated by the approach suggested by Argyris. Through his model, one can gain useful understanding as to the nature of the cognitive structures created and employed by the individual. It is also possible to follow the creation of new cognitive structures (Model II behaviour) to some extent.

**CONTENT ANALYSIS**

Responses essentially reflect attempts to communicate the psychological state of the individual. Social interaction basically contains forms of communication comprised of a set of responses and behaviours with the purpose of communicating the psychological states of individuals. The processes of communication have been analyzed and studied from many viewpoints. The interest of this investigation has focused on the lexical or verbal features of communication and learning in a school setting.

Gottschalk, Wignet and Gleser (1969) mentioned the tendency in early definitions of content analysis to consider only the syntactic and semantic elements in verbal responses (Kaplan, 1943; Janis, 1949; Berelson, 1952). In recent studies, broader
definitions appeared including pragmatics, the relationship of signs (words) to the people that produce or receive them (Osgood, 1959; Marsden, 1965; Holsti, 1967).

This investigator uses the broad definition proposed by Holsti (1967) and quoted by Gottschalk et al. (1969):

Content analysis is any technique for systematically and objectively identifying specified characteristics of messages.

Several investigators expressed the notion that obtaining precise and objective measurements of the kind and intensity of psychological experiences is extremely difficult (Gottschalk and Gleser, 1969; Gottschalk, 1979; Steingart et al., 1979). Clinical psychoanalysis empirically determined that unconscious motives strongly influence and distort perception, thinking and memory, and that we are largely unaware of this. Reports of subjective experience thus may be imperfect and our appraisals of the self or others may be highly distorted (Gottschalk and Gleser, 1969, p. 2; Chapman, 1967).

Nisbett and Wilson (1977) argued that people often cannot report on the existence of critical stimuli, thus, the accuracy of subjective reports is so poor as to suggest that any introspective access that may exist is not sufficient to produce correct or reliable reports. When people report on the effects of stimuli, they do this based on some a priori theories about the causal connections between stimulus and response. The memory of the cognitive processes that operated on the stimuli is generally ignored.
Subjective reports about higher mental processes are sometimes correct but mainly due to the incidentally correct employment of the \textit{a priori} causal theories.

Gottschalk and Gleser (1969) stressed the tendency of the learning and behaviour theories of focusing on action and frequency of response, making few if any inferences of the inner, subjective states of the human being. They propose an approach to content analysis of short, spoken speech samples which would utilize the respective strengths of the psychoanalytic model, the learning theory model and the linguistic model. Through the content analysis method developed mainly by Gottschalk and Gleser and used in numerous studies (Steingart \textit{et al}, 1979; Gottschalk, 1975, 1971, 1973; Gottschalk and Gleser, 1969a and 1969b), complex psychological states were assessed and numerical approximations were provided, assessable in terms of probabilities. The authors report that the method of content analysis they developed was applied to only a few of the relatively large number of feeling, motivational or cognitive states communicated through language, but express the opinion that the method is suitable for many other theoretical and practical considerations in both the content and the form of speech behaviour. A detailed description of the Gottschalk content analysis of speech for the human relations scale is given in Appendix A.

Discussing the possible applications of the Gottschalk scales, the authors suggest a multitude of directions for future
research and emphasize the applicability of content analysis to such areas as: abstractions, thought processes, emotional processes, action processes, states of being, etc. If content analysis is attempted along the lines of examining single word—grammatical—categories, and after making counts of such categories, the researcher may subsequently have to decide how such information is to be put together in order to draw meaningful conclusions (Gottschalk and Gleser, 1969a, p. 287-289).

The above authors did not follow this line of investigation but directed their efforts on larger units within the speech samples with their main interests concentrated toward psycho-therapeutic applications. The purposes of this study are directed to the educational implications of content analysis which were briefly mentioned by the authors. Also, written expression will be analyzed here for ease and reliability of scoring.

When spoken samples were compared to written samples of speech, both were found to be equally indicative of the measured psychological states. Written samples tended to be shorter and some subjects, especially mentally disturbed ones, found it difficult to produce written samples of sufficient length (Gottschalk and Gleser, 1969) for the purposes of analysis. This aspect of their findings concerning the difference between producing written or spoken speech samples should not be as pronounced on the high school level. It is assumed to hold that written samples generally will be shorter than spoken samples would be for the same time unit of testing.
Although it appears that the length of the test samples directly influences reliability, the effects of such influence will be controlled through the regulation of time for the completion of the responses (Gottschalk and Gleser, 1969; Gottschalk et al, 1969). Through unitization of the responses in case of longer speech samples, or control of available time for the responses, they found that different lengths or rates of responses could be compared.

The Gottschalk scales, relying on larger units for the identification of particular psychological states, are especially sensitive to variations in speech fluency. In some instances, which could be overly significant in case of short speech samples, verbal samples contained no scorabale references in certain categories. In this case, longer units for coding might be more important than the "atomistic" or single word class type of scoring classifications which this study will rely on.

As content analysis can be approached from many viewpoints, so it is possible to examine the relationship of language to demonstrated behaviour. West and Foster (1976, p. 57) emphasize the relation of parts of speech to particular internal conditions or "states" of the individual. More in line with Gottschalk's "atomistic" indicators, they also note the characteristics of nouns as symbols for "historical" reality. This emphasizes a certain static fixedness at the expense of "ongoing" experience.
Hayakawa (1964) details the process of arriving at this static fixedness and gives some indications why the process results in or indicates a psychological state.

Language behaviour has to be approached in light of the relationship between language and reality. This difference is the result of the interaction of our nervous system and the "object" of our experience. Something which is "not-words" is being expressed in words. The process of abstraction gives the insight of how this is accomplished and maintained by the individual. Since everything in the nervous system is in a constant change, and, since everything in the outside reality is equally in constant change, the individual is going to experience only a small fraction of the total object (reality) and, on the basis of the partial observation, it will select the language equivalent for designating the object in relation to the internal state. Thus, while the designated object will be labeled (this is usually an abstraction—a noun)¹ and will be considered in light of the relationship of the inner and outer environments at the moment of observation, if it is to be useful for future use, it has to have a certain quality of "a state" which can be extended to similar situations by all members of the collective where the language is spoken. This historical state is arrived at by ignoring differences.

¹Hayakawa demonstrates this process starting with "cow", notes that "Bessie the cow" is lower on the abstraction ladder as it is limited to only one cow—Bessie. Further abstractions from cow can be "livestock" to "farm assets" to "assets" to "wealth". These are labels and, on the most basic levels, they function as nouns.
This differentiating (ignoring differences) can go on on many levels providing us with different levels of abstractions. Generally, the more differences are ignored, the larger the inclusion class becomes, but, correspondingly, the higher the abstraction becomes while the definitions become more and more vague.

Ultimately we can arrive at expressions which in nature are highly abstract and may include very wide classes of content or referents. Hayakawa illustrated this process through the "abstraction ladder" and the idea of "Bessie, the cow". Ultimately, he showed that the abstract "wealth" could be used to refer to Bessie, although, as he remarked, "almost all reference" was lost to the characteristics of Bessie, the cow (1964, p. 176-179).

An earlier, more educational approach to the idea of relativistic state of perception can be found in the works of Herbart (1895; 1898a; 1898b; 1913).

Herbart advanced the idea of apperception which he understood as basically extending the senses or perception into new areas of learning. This could be accomplished (Herbart, 1898, p. 208) through spontaneous handling of new thoughts. For this to occur, normal perception will have to be associated to other "feelings and ideas". He maintained that for any perception to occur, feelings and ideas must be handled spontaneously. The basic tools of learning in his view, then, are the thoughts of the learner. Feelings also register as thoughts, but are sensed by the learner as different from the "ideas" which seem
to form the logical elements in the cognitive structure. This is a very similar idea to the "abstraction" process described by Hayakawa.

It is important to note that the apperceptive function relies on the role of logical and emotional elements but, due to the associative interaction, these elements seem to change their function and form a new domain. To best understand this process of apperceiving, or extending the perception into new areas of learning, it is going to be illustrated here by a process of mixing two colours.

Take RED for LOGIC and BLUE for EMOTIONS. When we mix the two colours, we create a new one—PURPLE. This new colour, while composed of red and blue, will always appear as purple. It is possible to separate the two colours and recreate the elements of blue and red, but once they are mixed together, they will appear as a new colour or a new category.

In this way, one can assume that the APPERCEPTIVE DOMAIN involves a distinctly different cognitive process which is created by the interaction of the logical and emotional cognitive processes.

To use the colour analogy further, one can surmise the interactions and estimate how the associations function. Purple is a rather unstable colour in that any amount of blue will immediately alter it toward a bluish purple (more emotional than logical associations), while any amount of red will make the purple more reddish (more logical than emotional associations). Thus, a slight variation of components will
alter the interaction and make the apperception different. Emotional elements are unstable and may appear to be quite justified to the individual when they reach the level of awareness (Gottschalk and Gleser, 1969, pp. 13-14). The logical elements, on the other hand, are largely predictable within an agreed-upon frame of reference (Hayakawa, 1964; Hall, 1976; Howell and Vetter, 1976). When the two components, the logical and the emotional, come together, the stability of the apperceptive domain becomes questionable.

One can illustrate this dynamic functioning of the apperceptive domain by examining the intuitive functioning. Intuitive leaps can be quite predictable, usually when logic is dominant in the intuition. Other times, especially when seemingly there is no "justification" for the particular idea to occur, new discoveries can be made based on a feeling that the idea is "just right". Becoming aware of the emotional components of the apperception can suddenly result in success without much obvious logical support.

What seems best to characterize the Apperceptive Domain is that it relies on normal perception components of logic and emotions but it can not function exclusively in either. The components make it an ASSOCIATIVE CONDITION which seems to suggest a certain "state like" behavioural application or indications.

The Ladder of Abstraction (Hayakawa, 1964) illustrates the use of exclusions to arrive at higher and higher levels of abstraction. In the creation of larger and larger classes
symbolized by single words, the processes inherent in the individual members belonging to the particular abstraction will be largely excluded. The form of the abstract may, though, imply the processes without directly describing them. This, in the case of nouns, suggests an "historical reality" or a state like emphasis rather than an ongoing experience (West and Foster, 1976, p. 57).

The level of abstraction in the case of nouns may be indicative of the apperceptive modes of thinking. The expression, "Some nouns are more nouns than others", can be explained by examining if a noun emphasizes more the logical process elements or the emotional "rightness".

To illustrate the notion of more "nounness", one can refer to an example offered by Harth (1983, p. 236). He pointed out that the noun "sensation" describes a subjective experience which lacks an appropriate verb. "The verb 'to sense' directs attention to the sensory apparatus and its physical response rather than to the subjective experience of a sensation." Thus, one can accept that the smoke detector senses the presence of smoke, but nobody would say it is having a sensation. Comparing the nounness of "sensation" to that of "the sense" leaves one with no other option than to "feel" sensation as a "more noun". "Sense", on the other hand, may or may not always be considered as a noun. The nounness will be largely determined by the contextual use and not the "feeling" associated with this word.
As indicated in the introduction, Anderson (1975, p. 183) suggested that the power of the language in its most primitive form seems to be a special kind of pattern of relationships among classes and their referents in the verbal system. Patterns in the verbal system, then, seem to correspond to other patterns in the non-verbal system. Thus, the non-verbal world is represented through classes of words where nouns represent things, prepositions represent static relations, while verbs represent changes.

Prepositions often can become the objects of thoughts and when operations are performed on them, a world of logic is opened up. Anderson seems to indicate that logic is a process of performing certain operations which seems to be best indicated through the use of verbs. Through the use of verbs, then, one can reference a system of changes or processes characteristic of logic.

The possibility of one word (or one grammatical word class) referencing the inherent processes in the deep structure of language was suggested by several investigators (Howell and Vetter, 1976; Vetter and Howell, 1971; Lenneberg, 1967). The initial acquisition of language by children is characterized by single word utterances which may be used by the children as very primitive, undifferentiated forms of sentences. The widely held belief of the above researchers is that these utterances incorporate the germs of a grammar. Due to the limited nature and number of these utterances, it is believed that
the context in which they are used will modify the deep structure implications.

Howell and Vetter (1976, p. 223) believe that these one-word utterances are in fact labels in which the "grammatical question" is not relevant. By studying these one-word utterances, the authors believe an understanding of early concept formation can be gained.

Some important indication as to the way this single-word referencing is representational of the cognitive processes referenced comes from the investigations of Brown and Bellugi (1964). They concluded that, at least in English, the sequencing of two words marks a new stage of development in the child's use of language. The two-word sequence is not a mere joining of two independent entities. Single-word utterances carry primary stress and have terminal intonation contour, but, when, for example, "push" and "car" are put into a single construction, "push car", the "push" will carry a lesser stress and lower pitch and will lose its terminal contour. The "car", on the other hand, will gain higher pitch and retain its primary stress and contour.

This seems to be indicating the apperceptive conditions represented through the use of nouns (which most single-word utterances are or function as such, especially if one accepts them as "labels") still being dominant, while the more process-oriented initial logic somewhat de-emphasized. This could be the result of the feeling on the part of the child that the logic of thought processes was once already represented in
the apperception and need not be re-emphasized again on the same level. To determine the semantic relationships, a careful analysis of the context in which the utterances occurred must be accomplished (Howell and Vetter, 1976, p. 226).

The communication of feelings is essentially a problem in discrimination (Davitz and Davitz, 1959). The discrimination is usually accomplished according to some scales of judgement (Hayakawa, 1964). The language of every-day life shows a multi-valued orientation, except in the case of violent quarrels and controversies.

In a situation of actual combat, the perception of the participants narrows down to the concepts of "myself and the enemy". This is accompanied by muscular tension, accelerated heart beat and circulation, and the release of hormones by the adrenal glands into the blood stream to contract the arteries to slow down the blood flow in case of injury. This is a "two valued" orientation. Discrimination is accomplished according to opposites. If something is not good, it must be bad. When language is used instead of actual combat, and the primitive outlets for expressing fear, hatred or anger are not readily available, verbal assaults are substituted which are accompanied by similar physiological effects as actual combat but probably of lesser intensity. Thus, some individuals who are quick to lose tempers and slow to regain them are in an almost constant state of emotional tension. In these instances the "two valued orientation" may become a way of life (Hayakawa, 1964, pp. 230-231).
The language of every-day life is usually less restricted and emotional qualities are expressed along "multi-valued orientations". We have "very bad", "not bad", "fair", "very good", etc. The greater the number of distinctions, the greater the number of courses of action implied (Hayakawa, 1964, p. 249).

The increased ability to discriminate comes mainly through the increase of interests according to Hayakawa. The two valued orientation is an indication of a single interest. The degree of emotional commitment is expressed through the multi-valued orientation, which, in turn, is represented through the ability to differentiate between emotions. This seems to be best represented through the use of adjectives. Adjectives seem to identify the existence or presence of emotional responses, while different levels or gradations of emotions are differentiated through the three degrees of comparison or through the particular attributive or predicative use of the adjectives (Osgood, Suci and Tannenbaum, 1957).

SUMMARY AND CONCLUSIONS

An individual's frame of reference is a highly selective screen between him and his external world. This screening structure determines the way various stimuli are or are not attended to. Largely, as a result of the function of the screen, the stimuli attended to and the resultant responses show discrepancies in that a response is not an exact replica
of the stimuli producing it. Obviously, a response is only a representation of the processing of the various stimuli. In this way, responses can be richer than the stimuli initiating them due to the incorporation of the already existing internal stimuli with the incoming external ones (Hebb, 1949).

Selective attention and emphasis within the frame of reference results in what can be considered as a context which is a conceptual model comprised of not only the stimuli attended to or screened out, but also what is referenced by the stimuli or responses on conscious or subconscious levels. Spoken language is an abstraction of an event, while writing can be considered as an abstraction of spoken language which serves as a reminder of what somebody did or said (Hall, 1967, p. 75).

Abstractions are created within a context and their meaning should be examined within the originating context (Hayakawa, 1964; Howell and Vetter, 1976; Brown and Bellugi, 1964). The importance of the context is emphasized by Hall (1976) when he stressed the notion that language productions being only simplified or altered variations of the real events they describe, rely for a part of their meaning on contextual use. Hayakawa (1964), illustrating the processes of abstracting, noted that higher abstractions are produced through the process of exclusions. Only those characteristics of an experience are retained for the higher abstractions which can coincide with other events. In this way, much of the details are lost referencing details of particular processes making up the individual member
of the abstractions, but an all-inclusive principle is generated which allows communications of extreme complexity.

In this way, language productions can be representative of large units of cognitive patterning of the "not-word" patterns. These "not-word" patterns are, then, the psychological realities of the individual and the speech patterns are only the representational aspects of these psychological realities (Anderson, 1975; Hayakawa, 1964).

Considering the above, the conclusion can be drawn that language spoken or written is a context within which the psychological patterns of the individuals are represented.

Words are only representations of the "non-word" patterns, and, depending on the degree of abstraction, they may become representative of smaller or larger patterns. Stimuli on one level of abstraction can be assessed as one type not particularly important, while, on other (higher or lower) levels of abstraction, the same stimuli may become extremely important. In this way, different stimulus dimensions can be created by the individual.

Several stimulus dimensions can combine into a domain where particular types of patterns will be processed, stored or created. Thus, we can, utilizing the exclusion process for abstracting suggested by Hayakawa, produce particular types of words which in the context of the language will stand for, or reference, large uniform areas of cognitive processes and conditions.
Logical processes are similar to the processes creating the language in that they rely upon an agreed set of rules and values and become activated in the process of being compared to the accepted rules as relevant dimensions for judging. The process orientation is of primary importance, while the context serves as the frame in which the process can operate. The context of logic is closely tied in with the culture setting of the individual, but the process orientation of logic is not. Thus, we can assume that words which reference the domain of logical processing will only be representative and will not become the domain itself.

An access to the presence of those patterns comprising the emotional domain is basically a process of differentiation. While the logical domain relies on orderly and predictable patterns which are highly context referenced, the emotional domain is not necessarily an orderly one. Arbitrary distinctions are as valid as those based on orderly processes. The nature of processing is discrimination in degree or intensity. The context in which these discriminations take place is highly individual, although some general conditions prevail for all individuals, this is achieved mainly through the use of the language responses.

As noted above, adjectives are word classes best suited to reference the emotional domain. Adjectives can function comparatively, attributively and predicatively. In all their functions they basically discriminate between referents to things (nouns) and process (verbs).
Theories of emotion exhibit the widest possible diversity to the point that some theorists even doubt the existence of emotions independently entering into the organism's information processing. Others formulate emotions as part of the information processing activity itself (Steingart et al., 1979). For the purposes of this investigation, the latter view will be accepted. This was supported by Steingart et al. when they remarked in the conclusions of their study concerning language behaviour and hand movements that, based on their observations, emotions signify important differences in the status of information processing (cognitive organization) during communication behaviour.

The nature of the relation between emotions and other cognition is not so clearly emphasized by researchers. While the notice was made of the different qualities of emotions from that of physical movements or even logic, there seems to be no agreement to anything else than the possible influence of emotions on other forms of cognition.

This investigator considers Herbart's understanding of apperception as an example of how logical cognitive components can interact with those of emotional ones and result in an extension of new knowledge. It is acknowledged here that this approach, which includes such things as instincts, intuitions, etc., seems a bit idealized if taken to an extreme. The purpose here is not to imply that all apperceptive activity will result in extension of the knowledge of the individual,
but to propose a theoretical framework to examine the interaction of processes and emotional responses to these processes through specific language productions.

As indicated before, nouns seem to be most suited to reference the apperceptive domain.

Verbs expressing operations on various cognitive structures will be assumed to reference logical cognitive activities, thus, will be taken as indicators of the activities in the logical domain.

Adjectives performing discriminations and differentiations will be taken to represent the emotional domain.

Content analysis within the confines of this investigation will be considered in terms of linguistic (written) productions.

Although a certain degree of arbitrariness is present in the assertion of what particular word classes represent in the cognitive organizations of the individual, essentially, this study can be considered as an extension of what Gottschalk calls "atomistic" approach to content analysis of high school students' writing. Given that available research is almost non-existent as directly bearing on this approach, a certain arbitrariness is hard to avoid. An attempt had to be made to assemble relevant facts from widely scattered investigations to develop the framework suitable to this approach. This was done to the best abilities of this investigator. It is believed that the investigation of any response or behaviour, as demonstrated through short, written samples of high school students, analyzed in a predetermined and systematic manner,
will improve the understanding of the psychological reality of the individual and eventually result in improvements in designing instructional interventions.

STATEMENT OF THE PROBLEM

PURPOSE OF THE STUDY

The present study investigates the preferential use of the following three word classes by high school students as demonstrated in brief written samples of language productions: verbs, nouns and adjectives. The study addresses the following questions:

1) What is the extent of consistency of choice concerning the use of particular word classes?

2) What changes can be expected in the word class choice across time and testing mode?

3) How will the dominant word class counts be effected when students are asked to alter their initial stand and take a different one?

4) Will students show different magnitudes of emotional involvement (as indicated by the Human Relations Scale) under the three word class categories?

5) Will there be an interaction effect between the dominant word class and the emotional involvement of subjects?
6) Will the mental thrust, as indicated by the particular dominant word class counts, predetermine the way students will be able to consider specific responses?

RATIONALE

The rationale for this study comes from the need to identify simple ways useful in normal classroom settings, to determine the preferential thinking styles of high school students. It is widely held by researchers that special testing almost always produces the expected findings. An impartial and independent assessment of the disposition of the students under these conditions seems limited.

It is felt by many that there is a need for assessing psychological dispositions in natural settings and that these psychological dispositions have serious bearing on the actual performance of individuals (Gottschalk, 1975; Hayakawa, 1964).

In educational settings, a simple testing procedure may result in the timely design of effective interventions to increase or produce original learning.

An educator, aware of his students' psychological states, can more effectively judge the necessary methods to be employed to avoid such occurrences as disenchantment or social alienation which, under classroom conditions, can result in partial achievement or none at all.

At present, the Gottschalk content analysis scales utilize brief spoken samples of speech to determine such psychological
states as hostility or human relations, but the assessment is achieved through complicated scoring categories which, while yielding the information about the particular psychological states, are not especially suited for classroom use.

**OBJECTIVES**

As indicated in the rationale above and in the literature review, the main objectives of this study are:

1) to explore the extent of consistency of choice concerning the use of verbs, nouns and adjectives;

2) to examine the influence of the particular dominant word class on later processing and responding;

3) to examine the nature of interaction of particular word classes and how they relate to the mental thrust (dominant response mode) of the individual in educational settings.

To address these objectives, assumptions were made as to the significance of the occurrence of verbs identifying the engagement of logical processes, nouns referencing the apperceptive domain and adjectives differentiating in the emotional domain.
CHAPTER III

METHOD

Chapter III includes description of the populations sampled and discussion of the experimental procedures used, including the two written forms used to obtain brief samples of writing. The final section of this chapter discusses the data analysis used in this study.

SUBJECTS

A group of 92 volunteer subjects were tested initially. Thirty-eight female and fifty-nine male grades 11 and 12 students from a suburban high school in British Columbia constituted Group I. Group II was composed of 83 students of the initial group of high school students: fifty-five males and twenty-eight females. A total of nine students were dropped from the study due to circumstances preventing re-testing (1 verb dominant, 7 noun dominant and 1 adjective dominant).

Students were drawn on a voluntary basis from different academic and vocational subject areas. These subject areas were: Chemistry, Biology, Physics, Art, Metalwork, Computer Science and Mathematics. An initial attempt was made to record the achievement standing of all students, but this was discontinued after it became evident that not all co-operating teachers were willing to do this for all the students. Instead, a request was made to try to include an equal number of high, medium and low achievers. This was agreed to by the classroom
teachers but no data were available later to confirm the overall success of this attempt. It was judged by the experimenter to be reasonably successful.

The 83 students tested and re-tested represented approximately 9% of the total school population. The percentage breakdown per total subject matter population is not available due to the fact that the school operates on a semester schedule and enrolment varies from time to time. Also, both grade levels (11 and 12) in the school may enroll in any grade level subject. It is estimated that between 15% and 25% of students engaged in a particular subject area at the time of testing were participating. However, this may be considered a fairly good representation.

MATERIALS

The materials used in this experiment consisted of two typed forms. Form I consisted of two parts. Part one requested the subject to write down any ten words. Part two provided a stimulus word and the subject was asked to respond to it. Stimulus words were chosen to give as little direction as possible to the notion of what kind of answers were expected; at the same time, an attempt was made to provide words to which all subjects can respond in some manner.

Form II, the re-test form, consisted of two parts as well. In part one, the subjects were given eight words which were taken either from their initial responses (control group) or provided according to the experimental conditions (experi-
mental group) and were asked to write down what important communication came to them. In part two, subjects were asked to take a totally different stand to their original stand and explain it in writing. Both Form I and Form II were folded before being given to the subjects. Subjects had to complete part one on both forms before they could see part two. Both Form I and Form II are included in Appendix B with the stimulus words initially employed in Test I.

Form I included specified time limits for both parts (2-3 minutes), but Form II limited the length of responses by controlling the available space for writing (Appendix B).

**PROCEDURE**

Initially, Form I was administered to a group of male and female grade 11 and grade 12 students. The form was folded on the indicated fold line (Appendix B) and the forms were given to each subject teacher for presentation to the volunteering students. Each teacher was asked to try to ensure as much as possible that both male and female students would participate. The teachers were asked to try to also ensure that a good mixture of high, medium and low achievers would participate. Nine volunteer teachers participated from ten different subject areas. The subject areas represented were chosen from the vocational, art, language and science sections. It was reasoned that since no random selection of students was possible, this selection of volunteer subjects would still provide an adequate sampling procedure. The teachers were instructed
to give the following information in addition to the instructions presented on the forms:

Mr. X (the name of the investigator was given) is conducting an experiment with a possible follow-up later. He would like some volunteers to participate. The forms given here are designed to give you enough instruction to respond to them in any way you wish. After reading the top part, and answering it, you can unfold the sheet and complete the bottom part as well. Please do not unfold the paper before you have completed the top part.

Testing was done in the regular classrooms where the students attended lectures. Tests were administered either before class began, during the class, or immediately after all instruction and assignments were completed in the course of regular sessions. No systematic attempt was made to administer the tests in any other way. Students were asked to obey the time limits set out in the instructions on the sheets (2-3 minutes) but no attempt was made to control for obeying the time limits other than after approximately five minutes, the forms were collected (for details of Form I, see Appendix B).

After the initial testing was completed, the forms were scored as to the number of VERBS, NOUNS and ADJECTIVES produced in the course of responding to the conditions set out in Form I. Both parts of the form were scored independently. Part one of Form I had to be scored in the following manner:

In the preceding pilot studies as well as in this one, difficulties were experienced in classifying words into word classes when the context was not clearly indicated. It is the nature
of the language (English) that many words, depending on the contextual use, can function in all three word class categories. To avoid making "educated guesses" concerning the way the student intended to use the particular word, the same word was counted into all of the word classes it could have belonged, given the proper contextual reference. (This practice was followed only to classify verbs, nouns and adjectives.) When the words appeared in a context, the difficulty in scoring was not experienced. Words were classified according to their function into the appropriate verb, noun or adjective word classes.

Part (a) of Form I asked the student to write down ten words in two minutes maximum allowed time. The difficulties in classifying words were uniformly experienced in part (a) for all students.

Both parts of Form I were scored and combined to divide subjects into three categories, depending on the highest counts of verbs, nouns or adjectives. In a very few instances, where subjects double loaded on two word classes, the classification into the dominant group was decided on the basis of scores obtained from texts (Form I, part (b)) rather than from simple word productions. This was decided in order to avoid biasing the classification of individuals into predominantly noun categories. Previous pilot studies indicated that the dominant response mode to "Write down X words" is nouns. The first part of Form I, in most cases, resulted in listing ten words, and only very seldom in production of any texts.
When double loadings occurred, usually the classification relied on the dominant loading obtained through scoring the second part (part (b)) of Form I. All other classifications into word class groups were performed based on the combined scores obtained on Form I, both part (a) and part (b).

Table 1 indicates the distribution of students into the three word class loadings.

The following stimulus words were presented, a single word to each subject, with the expectation that all subjects, regardless of subject area, would be able to respond in some manner:

POINT, A POINT, LINE, A LINE, SPACE, TIME, SPACE-TIME, TIME-SPACE, METALWORK, DESIGN

The selection of the particular words quoted above was based on the expectations that students would be able to respond to these words without difficulty and spontaneously. The words used were considered common enough to be part of the students' vocabulary and not to suggest any "right" or "wrong" answers. All words, except "metalwork" were randomly assigned to all students. "Metalwork" was randomly assigned only to the students attending the metalwork classes.

Under the re-test condition (Form II, parts (a) and (b)), the initial three groups classified into dominant verb, noun or adjective groups (scores from Form I) were further divided into two equal parts for each word class. In this manner, six groups of students were formed. For each respective word class category, the groups were initially balanced (in the re-test
treatment, some subjects were lost from all groups - see page 33 for breakdown), but the word class categories were not balanced among each other due to the tendency of the subjects to respond in noun terms more than in any of the other two categories. No attempt was made to balance any of the groups according to sex.

Students under each word class were randomly split into two groups of CONTROL and EXPERIMENTAL.

In part (a) of Form II, a set of eight words were presented to the students. A request was made to indicate what important communication they had received from the words presented.

The eight words were considered sufficient to proportionally balance the three word class categories within 12% - 15%. A smaller number of words could have resulted in less fluent responding, while a larger number of words may have resulted in "tiring" the students and increasing chances of not responding to all of the cue words.

Prior pilot studies indicated that when subjects were asked to provide ten words, the initial five to eight words were given with hardly any pause, but the next two words seemed very hard to provide. Thus, it was considered here that the upper limit of eight words would be appropriate to elicit the maximum spontaneous responding.

For the control group, words were selected from the pre-test (Form I) and an attempt was made to proportionally represent the scoring in all three categories for each student
within 12% - 15%. This meant that the dominant high score was present as well as the sub-scores in the other two categories. No new words were added to the stimulus words under any of the control treatment groups.

For the experimental groups, new words were selected. These were chosen to support the dominant word class scores of each of the students. The words were selected to refer to the student's contextual references on Form I, but they were not the same words used by the student. This meant that if, for example, the subject scored highest on nouns on the pre-test, then new nouns from the student's contextual references were generated and presented in the post-test, further supporting the dominant category of the subject's scores from Form I.

In part (b) of Form II, both the control and the experimental subjects were asked to take a totally different stand than in part (a) of Form II, and explain it as fully as they could.

The elapsed time between the pre-test (Form I) and the post-test (Form II) was between seven and ten days.

Both parts of Form II were scored and the scores were combined to establish if the subjects changed categories or remained in the same word class category as they scored on Form I.

Table 2 indicates the distribution of the students into the three word class loadings.
DATA ANALYSIS

Tests of Consistency

Consistency of preference of using verbs, nouns or adjectives was measured in two ways.

1) Consistency over time. For each subject, a dominant word class category was assigned after completion of Form I. Seven to ten days later, the same subject was tested and a dominant word class category was again assigned after completion of Form II. For each word class category, the distribution of students with respect to the word class categories they occupied on Form I and Form II, a comparison was made using a chi square analysis for two related samples.

The Kendall Coefficient of Concordance (W) was computed for Form I and Form II to test the agreement of ranking subjects into VERB/NOUN/ADJECTIVE word categories under the two treatment conditions (Forms I and II).

2) Consistency over test mode. For Form I and Form II, a chi square analysis to determine the significance of differences among the three independent word class categories was computed. Cochran's Q was computed to compare Form I to Form II. This test is recommended (Siegel, 1956) for testing whether three or more matched sets of frequencies or proportions differ significantly among themselves. A chi square analysis for two independent samples was computed for comparison of preference of word class categories for male and female subjects. Control and experimental groups with combined male/
female subjects were compared using a chi square analysis for two independent samples for the NOUN and VERB categories. For five highly fluent (90 words or more produced on Form II) subjects in the VERB and NOUN categories, and for four subjects in the ADJECTIVE category, Gottschalk's Human Relations Scale was scored. The mean scores for each word class category were computed. A graphic representation was used to present the scores (see Figure 1 and Table 8).

The Kendall Coefficient of Concordance was computed for the scores obtained on the Human Relations Scale to test the agreement of the three word class categories measuring different magnitudes of emotions (Table 9).
CHAPTER IV
RESULTS

Chapter IV presents a description of the experimental groups of subjects and the results of analyses.

Description of the Experimental Groups

There were 83 students from grades 11 and 12 tested on both Form I and Form II: 55 males and 28 females. Based on the scores obtained on Form I, 16 males and 5 females were classified as VERB DOMINANT (pages 37-38; total 21 subjects). 36 males and 21 females (total 57 subjects) were classified as NOUN DOMINANT (pages 37-38). 3 males and 2 females (total 5 subjects) were classified as ADJECTIVE DOMINANT. The groups, VERB/NOUN/ADJECTIVE dominant (pages 37-38), differed significantly ($x^2=15.69$, df=2, $p\leq.001$; Table 1).

Tests of Consistency

1) Consistency over time. On the post-test (Form II), again the groups VERB/NOUN/ADJECTIVE dominant differed significantly ($x^2=8.64$, df=2, $p\leq.02$; Table 2), but there was no significance between the two treatment conditions (Form I and Form II) ($x^2=5.23$, df=2, $p>.05$; Table 3).

Kendall's Coefficient of Concordance ($W$) indicated nearly perfect agreement between the distribution of scores obtained under the two treatment conditions and that of a "perfect" theoretical model represented by the Kendall $W$ (Table 4, $N=83$, $k=3$, $S=10.02$, $W=0.00002$). Siegel (1956, p. 230) suggested that this kind of use of the $W$ is justified. Here, it is
taken that the W indicates the consistency of the phenomena associated with the various word class categories under the two treatment conditions (Forms I and II).

2) Consistency over test mode. Consistency of word class preference was not a function of sex. The males did not differ significantly from the females on the combined scores (Form I and Form II) in their preference of using VERB/NOUN/ADJECTIVE dominant word classes ($x^2 = .56, df=2, p > .05$; Table 5).

The probability to perform on either of the forms (Form I and Form II) was the same for all groups of VERB/NOUN/ADJECTIVE dominant word classes. (Cochran's $Q$, $x^2 = 5.23, df=2, p > .05$) Table 3 indicates the frequency distribution of students (male/female) into the dominant word class categories under the two treatment conditions (Form I and Form II). The test of group differences for the experimental and control groups under the VERB and NOUN dominant word classes showed no significant differences using the chi square for two independent samples. No test for differences for the ADJECTIVE dominant groups were performed since the small size of these groups made it meaningless to compute any scores. Similarly, only the characteristics of the combined male/female groups were examined due to the small samples of female subjects in some of the categories ($x^2 = 1.1714, df=1, p > .05$ - NOUN dominant, $x^2 = .0111, df=1, p > .05$ - VERB dominant). The frequency distributions for the changes are presented in Table 6 for the NOUN dominant groups, and in Table 7 for the VERB dominant groups.
The values on the Gottschalk Human Relations Scale showed differences in the magnitude of emotions associated with the different word class categories, with ADJECTIVE dominant subjects having higher scores than either of the VERB dominant or NOUN dominant subjects. The VERB dominant subjects showed the least variations, while the NOUN dominant subjects showed the most variations. ADJECTIVE dominant subjects had the highest mean score, while NOUN dominant subjects had the lowest mean score. This scale is claimed to indicate the presence and measure the magnitude of certain emotions associated with the notion of human relations.

For more on the Gottschalk Human Relations Scale, refer to Appendix A. Table 8 indicates the obtained values on the Human Relations Scale. Figure 1 presents the same data through a graph.

The obtained value of the Kendall Coefficient of Concordance (W) was very small (W=.0042). This indicates little possible agreement between the three word class categories and their associated magnitude of emotions (as measured by the Human Relations Scale). This is taken to indicate that the different word class categories were associated with significantly different magnitudes of emotions. Table 9 gives the distribution of scores from the Human Relations Scale (Gottschalk and Gleser, 1969) for 14 highly fluent high school students.

It must be noted that the Human Relations Scale may yield positive and negative values. In the calculations of the
Kendall $W$, it was considered appropriate to regard positive and negative values as indicating a certain degree (magnitude) of emotions. Therefore, the obtained scores were used as absolute values rather than negative or positive ones. All calculations are based on the absolute values of the scores. (Calculations based on the relative values of the scores yielded $W=.0027$ which was not significantly different from the $W=.0042$ for the absolute values of the scores.)

**Summary**

The grouping of subjects into VERB/NOUN/ADJECTIVE dominant categories revealed significant differences in frequency. This significance was equally valid for both test modes and across testing time. Although there were individual changes in categories from Form I to Form II, these were not significant on a group/category level. There were no significant differences found as to the preference of word class categories according to gender either. Further, the experimental and control conditions did not significantly influence the word class preferences of either sex or under the combined treatment conditions.

The values obtained on the Human Relations Scale were different for all word class categories, with the ADJECTIVE dominant subjects obtaining the highest values, while the NOUN dominated subjects showed the greatest variance.
Table 1

Frequency Distribution of High School Students into Categories of VERB/NOUN/ADJECTIVE under Pre-Test Conditions (Form I - Parts a & b)

<table>
<thead>
<tr>
<th>Condition</th>
<th>VERBS</th>
<th>NOUNS</th>
<th>ADJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form I Part a</td>
<td>4.33</td>
<td>76.66</td>
<td>3.66</td>
</tr>
<tr>
<td>Form I Part b</td>
<td>21.00</td>
<td>55.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>

N=83, $x^2=15.69$, df=2, $p<.05$ (significant)

Note: Split credit assigned to subjects double or triple loading on categories.
Table 2

Frequency Distribution of High School Students into Categories of VERB/NOUN/ADJECTIVE under Post-Test Conditions (Form II - Parts a & b)

<table>
<thead>
<tr>
<th>Condition</th>
<th>VERBS</th>
<th>NOUNS</th>
<th>ADJECTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form II Part a</td>
<td>25.83</td>
<td>53.33</td>
<td>3.83</td>
</tr>
<tr>
<td>Form II Part b</td>
<td>46.50</td>
<td>36.50</td>
<td>2.00</td>
</tr>
</tbody>
</table>

N=83, $x^2=8.64$, df=2, p<.05 (significant)

Note: Split credit assigned to subjects double or triple loading on categories.
Table 3

Frequency Distribution of High School Students into Categories of VERB/NOUN/ADJECTIVE under Pre-Test and Post-Test Conditions (Form I & Form II)

<table>
<thead>
<tr>
<th>Test</th>
<th>VERBS</th>
<th>NOUNS</th>
<th>ADJECTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a &amp; b</td>
<td>25.33</td>
<td>131.66</td>
<td>8.66</td>
</tr>
<tr>
<td>Form II</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a &amp; b</td>
<td>72.33</td>
<td>89.83</td>
<td>5.83</td>
</tr>
</tbody>
</table>

N=83, $x^2=5.23$, df=2, $p>.05$ (n.s.)

Note: Split credit assigned to subjects double or triple loading on categories.
Table 4

Distribution of Scores Across Test Periods
(combined Tables 1 and 2; Form I a/b and Form II a/b)
for Kendall's Coefficient of Concordance (W)

<table>
<thead>
<tr>
<th>Word Category</th>
<th>Form I</th>
<th>Form II</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>VERB</td>
<td>4.33</td>
<td>21.00</td>
</tr>
<tr>
<td>NOUN</td>
<td>76.66</td>
<td>55.00</td>
</tr>
<tr>
<td>ADJECTIVE</td>
<td>3.66</td>
<td>5.00</td>
</tr>
</tbody>
</table>

N=83, k=3, s=10.02, W=0.00002

Note: Here, the W is an index of divergence of the actual agreement shown in the data from the maximum possible (perfect) agreement (Siegel, 1956, p. 230) that all parts of all tests measure the same phenomenon associated with VERB/NOUN/ADJECTIVE word classes.
Table 5

Frequency Distribution of High School Students According to Gender into Categories of VERB/NOUN/ADJECTIVE under Treatments I & II (Form I & Form II)

<table>
<thead>
<tr>
<th>Treatment I &amp; II</th>
<th>VERB</th>
<th>NOUN</th>
<th>ADJECTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males (N=55)</td>
<td>65.83</td>
<td>145.66</td>
<td>11.16</td>
</tr>
<tr>
<td>Females (N=28)</td>
<td>31.83</td>
<td>75.83</td>
<td>3.33</td>
</tr>
</tbody>
</table>

\[ x^2 = 0.56, \text{ df}=2, p>0.05 \text{ (n.s.)} \]
Table 6

Frequency Distribution of Changes for the Experimental and Control Groups for *NOUN DOMINANT* High School Students

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Noun</th>
<th>Verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>Experimental</td>
<td>25</td>
<td>8</td>
</tr>
</tbody>
</table>

\[ x^2 = 1.1714, \text{df}=1, \ p>.05 \ (n.s.) \]

Note: Students changed category from noun dominant to verb dominant. No subject changed to the adjective dominant category.
Table 7

Frequency Distribution of Changes for the Experimental and Control Groups for VERB DOMINANT High School Students

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Verb</th>
<th>Noun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Experimental</td>
<td>8</td>
<td>2</td>
</tr>
</tbody>
</table>

\[ x^2 = 0.111, \text{ df}=1, \ p > 0.05 \text{ (n.s.)} \]

Note: All subjects changed to noun dominant category. No subjects changed to adjective category.
Table 8

Values obtained on Gottschalk's **HUMAN RELATIONS SCALE**
for the **Magnitude of Emotions**
in the **VERB/NOUN/ADJECTIVE** Categories
for a Small Sample of Highly Fluent Subjects

<table>
<thead>
<tr>
<th>S</th>
<th>Verbs</th>
<th>Nouns</th>
<th>Adjectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.54</td>
<td>.72</td>
<td>1.27</td>
</tr>
<tr>
<td>2</td>
<td>1.54</td>
<td>.00</td>
<td>1.29</td>
</tr>
<tr>
<td>3</td>
<td>1.52</td>
<td>-1.44</td>
<td>2.96</td>
</tr>
<tr>
<td>4</td>
<td>1.74</td>
<td>1.65</td>
<td>2.39</td>
</tr>
<tr>
<td>5</td>
<td>1.65</td>
<td>-1.61</td>
<td>- -</td>
</tr>
</tbody>
</table>

\[ \bar{X} = 1.59 \quad \bar{X} = 1.08 \quad \bar{X} = 1.97 \]

Note: The means are calculated based on absolute values of the scores.
Table 9

Distribution of the Scores from the Human Relations Scale (Gottschalk & Gleser, 1969) for the Calculation of the Kendall Coefficient of Concordance (W)

<table>
<thead>
<tr>
<th>Word Class</th>
<th>Human Relations Scale Scores for Emotions (H.R. Scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$S_1$</td>
</tr>
<tr>
<td>Verb</td>
<td>1.54</td>
</tr>
<tr>
<td>Noun</td>
<td>0.72</td>
</tr>
<tr>
<td>Adjective</td>
<td>1.27</td>
</tr>
</tbody>
</table>

N=14, k=3, s=8.6438, W=.0042

Test of Significance $\chi^2=.1638$, df=13, p>.05 (n.s.)

Note: The low value of the W (.0042) indicates that the different word class categories are associated with different magnitudes of emotion.
### Table 10

Frequency Distribution of 83 High School Students
(55 Males, 28 Females of Grades 11/12)

into DOMINANT CATEGORIES of VERB/NOUN/ADJECTIVE under Pre-Test (Form I) and Post-Test (Form II) Conditions

<table>
<thead>
<tr>
<th></th>
<th>Form I (a &amp; b)</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verb</td>
<td></td>
<td>16</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>Noun</td>
<td></td>
<td>36</td>
<td>21</td>
<td>57</td>
</tr>
<tr>
<td>Adjective</td>
<td></td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

\[ x^2 = 1.2626, \text{ df}=2, \ p>.05 \ (\text{n.s.}) \]

<table>
<thead>
<tr>
<th></th>
<th>Form II (a &amp; b)</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verb</td>
<td>21.5</td>
<td>13</td>
<td>34.5</td>
<td></td>
</tr>
<tr>
<td>Noun</td>
<td>31.5</td>
<td>15</td>
<td>46.5</td>
<td></td>
</tr>
<tr>
<td>Adjective</td>
<td>2.0</td>
<td>0</td>
<td>2.0</td>
<td></td>
</tr>
</tbody>
</table>

\[ x^2 = 1.3073, \text{ df}=2, \ p>.05 \ (\text{n.s.}) \]

Note: Split credit assigned to two subjects for double loading on categories.
Table 11

Frequency Distribution of 83 High School Students
(55 Males, 28 Females of Grades 11/12)
into **DOMINANT CATEGORIES** of VERB/NOUN/ADJECTIVE
under Combined Pre- and Post-Test (Form I & II) Conditions

<table>
<thead>
<tr>
<th>Form I (a/b)</th>
<th>Form II (a/b)</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verb</td>
<td>37.5</td>
<td>18</td>
<td>55.5</td>
<td></td>
</tr>
<tr>
<td>Noun</td>
<td>67.5</td>
<td>36</td>
<td>103.5</td>
<td></td>
</tr>
<tr>
<td>Adjective</td>
<td>5.0</td>
<td>2</td>
<td>7.0</td>
<td></td>
</tr>
</tbody>
</table>

\[ x^2 = .1774, \text{df}=2, \ p>.05 \text{ (n.s.)} \]

Note: Split categories assigned to two subjects for double loading on categories.
Table 12

Frequency Distribution of 83 High School Students
(55 Males, 28 Females of Grades 11/12)
into Categories of VERB/NOUN/ADJECTIVE
under Treatments I (Form I a/b) and II (Form II a/b)

<table>
<thead>
<tr>
<th></th>
<th>Verb</th>
<th>Noun</th>
<th>Adjective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males/Form I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N=55)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>3.50</td>
<td>49.83</td>
<td>3.33</td>
</tr>
<tr>
<td>(b)</td>
<td>16.00</td>
<td>34.00</td>
<td>3.00</td>
</tr>
<tr>
<td>Males/Form II</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>16.33</td>
<td>35.83</td>
<td>2.83</td>
</tr>
<tr>
<td>(b)</td>
<td>30.00</td>
<td>26.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Females/Form I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N=28)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>0.83</td>
<td>26.83</td>
<td>0.33</td>
</tr>
<tr>
<td>(b)</td>
<td>5.00</td>
<td>21.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Females/Form II</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>9.50</td>
<td>17.50</td>
<td>1.00</td>
</tr>
<tr>
<td>(b)</td>
<td>16.50</td>
<td>10.50</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Note: Split categories were assigned to subjects double and triple loading on categories.
Values obtained for the Magnitude and Frequency of Emotions on the Gottschalk Human Relations Scale for selected highly fluent subjects in the VERB, NOUN, ADJECTIVE Categories.
CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

Summary of Results

The objectives of this study (as described on pages 31-32) were to:

1) explore the extent of consistency of choice concerning the use of verbs, nouns and adjectives;
2) examine the influence of the particular dominant word class on later processing and responding; and
3) examine the nature of interaction of particular word classes and how they relate to the mental thrust of the individuals in educational settings.

Accordingly, the study was designed to obtain evidence which would address or answer the following specific questions:

1) What is the extent of consistency of choice concerning the use of particular (VERBS/NOUS/ADJECTIVES) word classes?
2) What changes can be expected in the word class choice across time and testing mode?
3) How will the dominant word class counts be effected when students are asked to alter their initial stands and take a different one?
4) Will students show different magnitudes of emotional involvement (as indicated by the Human Relations Scale) under the three word class categories?

5) Will there be an interaction effect between the dominant word class and the emotional involvement of subjects?

6) Will the mental thrust, as indicated by the particular dominant word class counts, predetermine the way students are able to consider specific responses?

The results fulfill these objectives since the data answer the foregoing questions. In summary, it was found that:

1) high school students, regardless of sex, significantly differ in their choice of using VERB/NOUN or ADJECTIVE word classes as their dominant response mode. Further, the dominant response mode is maintained consistently across time (7 to 10 days) and across test mode (Form I and Form II).

2) high school students do not significantly alter their initial dominant word class category when asked to take a different stand to that of their preferred one expressed previously.

3) small samples of highly fluent high school students show different magnitudes of emotional involvement on the Human Relations Scale under the three word class categories.

4) small samples of highly fluent students under ADJECTIVE dominant response mode showed the highest emotional magnitudes, while students under VERB dominant response mode
showed the least variability. Students under NOUN dominant response mode showed the most variability of emotional magnitudes.

5) some changes had occurred in the use of dominant response categories on individual bases under the different treatment conditions; they were not statistically significant concerning the experimental group as a whole. Students were not significantly influenced by different conditions, but showed different emotional involvement under the respective response modes. This leads to the conclusion that the mental thrust, as measured by the dominant word class, had more influence in considering specific responses than did the treatment conditions.

Conclusions

It is difficult to relate the findings of the present study to previous research other than within the framework suggested in the introduction. The need to identify simple ways useful in normal classroom settings to determine the preferential thinking styles of high school students is experienced by teachers. Although instruments exist to determine thinking styles, they are either too lengthy and complicated, or require high level training in interpreting and evaluating the results. In classroom intervention, results of such testing will be further influenced by the continuous interaction of students with teachers, bringing
the matter of teacher influence on the performance of the students into question. Decisions made under these conditions must be cautiously made, at best.

Classroom teachers, on the other hand, often are interested in not the general disposition of students, but a particular observation related to specific lessons or topics. To accomplish any understanding of the momentary response of the individual students to particular topics under consideration, a content analysis of short, written or spoken samples of students' work can be performed. This could be utilized to gain potentially useful information as to the presence or absence of any degree of interest, and the capacity of the individual student for constructive, mutually productive, or satisfying human relationship (Gottschalk and Gleser, 1969, p. 220).

Gottschalk and Gleser (1969) advanced the idea that the relative magnitude of such capacity or need as indicated above, often seemed to be an important factor in how well patients responded to treatment, or how successful one was in a career or in learning from others.

The results of the present study indicate that the students tested employed certain word classes (VERBS/NOlNS/ ADJECTIVES) in a highly consistent manner, but that individuals differed in their preference as to the response mode. Many students seemed to habitually use more nouns than verbs, and only very few students habitually employed the adjectives
as their dominant response mode when writing short answers to the kind of stimulus used here.

Previous researchers noticed the relationship of adjectives and nouns in memorizing. (Paivio, 1963; Lambert and Paivio, 1956) Both researchers found that NOUN-ADJECTIVE word groups were learned more easily when the nouns preceded rather than followed the adjectives. They pointed out that the habitual use of the English language would suggest that the ADJECTIVE-NOUN order is the more common use of the linguistic patterns, but that the habitual use of the language seems to be overridden by other factors when memorizing adjectives and nouns. Unfortunately, while the function of nouns acting as conceptual "pegs" from which their modifiers can be hung, was used to explain the approach to the investigations, no satisfactory explanations were provided as to why adjectives could not accomplish this function.

In the present study, it was theorized that adjectives reference the emotional domain where the main function is to discriminate and differentiate. (Davitz and Davitz, 1959) One would expect that to discriminate, the object or subject of discrimination has to be specified beforehand. This could be the nature of the "peg". The noun would focus attention on the object or subject of thought, and only after this focusing is achieved can the individual proceed with differentiation or discrimination. This order seems to come easier to individuals in spite of the language-imposed constraints
and could be considered representative of a person's psychological state (Paivio, 1963; Lambert and Paivio, 1956).

Some indications that the emotional domain is referenced by adjectives comes from the investigation of a small group of adjective dominant students in the study. The Gottschalk Human Relations Scale was used to obtain scores for the frequency and magnitude of emotions which this scale is supposed to measure. (For more on this scale, see Appendix A.) Adjective dominant students had the highest scores of the three word class groups in the study. This indication (in the expected direction) of higher emotional involvement for adjective-oriented high school students has to be taken with some caution due to the primarily small sample of participating students and the lack of other outside measures confirming the above findings.

The notion of apperception was mainly developed along the explanations offered by Herbart (pages 17-22) and was compared to the mixing of colours.

The mixing of colours represented the interaction of the two domains. It was pointed out that different amounts of emotions or logic will expectedly be associated with different nouns. In some nouns, the more logical elements in others, the more emotional elements will prevail. The expectations under the Human Relations Scale, then, would be a fluctuation in the emotional elements for students with the noun dominant response mode. This was again confirmed, but the same
cautious acceptance is urged as in the case of the adjective dominant students due to small sample sizes.

Verb dominant response mode was expected to show the most stable emotional involvement. The magnitude of the emotions initiating the particular verb-logical response was not the subject of this investigation, but it was expected that once the action was initiated, the emotional involvement would not show great variations but would remain steady for all subjects.

These expectations were also confirmed on the Human Relations Scale for the verb dominant subjects.

In all three categories, only a small number of students were compared on the Human Relations Scale. The reason for this was that only a very limited number of students were classified into the adjective dominant class. And, in order to make any comparison somewhat meaningful, it was decided to compare the performance only of those highly fluent students who satisfied the 70-100 word performance criterion suggested by Gottschalk.

The results obtained tend in the expected direction for the particular word class categories. This, although with caution, is taken as an optimistic indication that further research, designed to examine these aspects associated with the dominant response mode of the subjects, would be warranted.

Further support for the above conclusions comes when the consistency over time and test mode is taken into account.
Some changes were noted in individual scores, and a number of subjects changed dominant response modes, but this was not statistically significant (see Tables 3, 4, 5, 6 and 7). The changes seemed to fall into a pattern where the verb dominant subjects (both male and female) changed to noun dominant subjects, while the noun dominant subjects changed to verb dominant ones. Any changes occurring in the adjective dominant category was to noun dominant response mode. This suggests that the initial number of words produced might not have been a large enough sample to properly determine the individual's dominant response mode. Gottschalk also suggested a minimum number of words to be taken for valid measurement of individual psychological states or moods. It was also stated that a minimum of 70 words were required in their studies to reliably employ the various Gottschalk scales. In the present study, no minimum limits were entertained, but all indications are that the small sample of word productions will result in errors when classifying students into dominant word class categories (Gottschalk and Gleser, 1969; Gottschalk et al., 1969).

Implications for Education

The classroom teacher is continuously faced with the conflict between test-specific learning as measured by particular tests, and the broader domain of desirable learning outcomes. The resultant learning under these conditions
becomes compartmentalized into isolated bits of knowledge. The functioning of the student is thus viewed in light of the separate subject matters and isolated sets of testable skills. Above all, no uniform criteria are available to consider any unity of knowledge. Knowledge is considered and accepted only in terms of the tests administered. It is a phenomena observed in high school that large numbers of students at one time or other will be "turned off" to learning. Testing done under these conditions will not be a true indicator of the student's knowledge, but, rather, his/her willingness, inclination, motivation, etc. to comply with the testing.

Education implies, and often is supposed to have, much broader connotations. At present, testing, at least for scholastic achievement, does not allow the examination of such things as, for example, willingness to learn or to be tested. These concepts in the students' perceptions can occupy important proportions. For the educator, it can be more important to examine than to determine the actual degree of learning as it relates to the topics under study.

The present study established that students utilize language differently under similar conditions of testing. Assumptions were made in the rationale for this study as to the referencing of particular domains through VERBS, NOUNS and ADJECTIVES. These assumptions were that verbs largely could be indicative of logical nouns of apperceptive and adjectives of the emotional domains. The present study could
not confirm these assumptions beyond any doubt, but provided indications that the possibility exists to assume the above relationships. While generalizations have to be cautious at this point, one can see the possible uses of a content analysis based on short, written samples of high school students.

The method involves minimal interaction of the teacher with the students, while scoring the method requires a simple counting of the relevant words into VERB/NOUN/ADJECTIVE categories. Apart from the cautious conclusions being drawn on the basis of this study, significant insights can be gained as to the characteristics of the individual students.

Several of the Gottschalk validation studies report single words being used to determine the presence of feelings, moods or emotions (Gottschalk and Gleser, 1969). Adjective check lists were developed to measure hostility (hostility inward - directed against the self, and hostility outward - directed toward others). Subjects were asked to cross out words which they felt did not apply to their feelings and check off the ones which applied to them. Short, written samples obtained from high school students can be readily analyzed through a count of the relevant word categories without relying on the report of subjective experience and, at the same time, much of the teacher-student interaction may be avoided. A scoring system could be developed using the relevant word categories to detect the logical and not only the emotional parts measured by the Gottschalk method. This system then could be validated
against other valid tests of personality (Edwards Personal Preference Scale, Matching Familiar Figures Test, 16 pf, et al). Students seem to be consistent in their response mode under different testing conditions and across time (7-10 days) with the largest number of students preferring the noun dominant response mode. The classroom teacher, by analyzing several short, written samples of a student, can gain an understanding of the psychological responses of the student. If the otherwise noun dominant student suddenly changes dominant response modes from test to test, this may be reason to pay more attention to the student and find out what the causes may be for the irregular performance. It could be emotional difficulties or simple inability to follow the level of instruction.

The method of content analysis offered here can not at this time determine what the causes may be, but it may give an early indication of some future problems developing and to the possible nature of problems experienced by the student.

Although most students responded in noun dominant modes, the possibility of obtaining only the adjectives or other secondary loadings and using them as indicators of the various psychological states was not explored. Adjective check lists employed in the Gottschalk validation studies to detect emotions could be compiled from the written responses just as easily as from separate tests. Similarly, verbs or nouns could be separated and examined as indicators of psychological states.
In skill or action based instruction, the verb-oriented response mode seems to be more relevant. The student who persists in a noun response mode may have a too-general understanding of the topic. On the other hand, adjective-orientation may indicate procrastination or indecision.

Future research may prove the relationship of the particular word classes to various domains. This would provide an educationally different approach to assessing student performance. It also could be developed to produce a framework for integration of various subject matters into a composite whole. This would allow the classroom teacher to continuously follow the progress of students with minimal interference, while, at the same time, design appropriate intervention to promote specific learning outcomes. An appropriate application (after more research on this topic), in the opinion of this investigator, could be mastery learning in normal classroom setting where different students could proceed with equal rate of learning toward a set learning outcome, achieving the same level of comprehension under individual learning interventions. At present, this is mainly impossible to accomplish due to time constraints imposed on the operations within the learning environment in regular school settings.

When the diagnostic tools are simple and quick to administer, the teacher is free to individualize the instruction and, thus, allow the student to accomplish the stated learning tasks.
The present study offers some of the basic concepts and procedures for the development of such a diagnostic tool applicable in regular classroom settings.

**Recommendations for Future Research**

It is the opinion of this researcher that the implications of this study far outreach the actual findings. Pilot studies were conducted in the earlier stages of this research, where adults from different professions and trade backgrounds as well as elementary and high school students were asked to write down words. The main purpose of these pilot studies were to determine if short or very short, spontaneous written samples would be indicative of how individuals respond to the environment.

The pilot studies indicated that even as short a verbal sample as five words may be used to establish patterns in responding to the environment. The initial responses in these short samples suggested an indication of some kind of determination on how to best respond to the stimuli presented to the subjects. In other words, intentions were displayed to form or display a "frame of reference" to assess the nature of the stimuli presented. When ten words were obtained from subjects, the initial attempt to establish the "frame of reference" was displayed, but also some indications were produced as to the intent of what to do with the information gained by the processing of stimuli.
This phenomenon did not seem to be always on the level of conscious decision making. The subjects, on the other hand, regardless of age, sex or education, tended to group into mostly noun dominant, secondly verb dominant, and only very seldom adjective dominant response modes. This did not seem to change even when one of the subjects used the dictionary to give the required speech samples.

The pilot studies asked for only independent words, but did not explore if the word categories would be used in the same way in sentences or short texts. Although an assumption was made that in sentences as well as in single-word productions the majority of the subjects would tend to use nouns as the dominant response mode, it was not expected that the proportions would be so extreme as results indicated later (see Tables 1, 2 and 3).

The distribution of the subjects into mainly noun and verb dominant categories produced conditions where the adjective dominant group was so small that there were doubts as to the usefulness to compare the adjective group to the rest of the subjects.

This put constraints on the study. Future studies could eliminate this apparent unwillingness of high school students to produce adjectives by inclusion in the design of requests to produce as many adjectives versus nouns or verbs in a given time as they can. This would ensure that with some adjustments, the Human Relations Scale could be applied to all
subjects. This would, in turn, allow broader conclusions to be made as to the frequency and magnitude of emotions associated with the three dominant response modes. Some of the Gottschalk scales (Gottschalk and Gleser, 1969, p. 148) implied or suggested such possible uses with single-word responses.

To test how thinking styles relate to particular word classes, one could measure subjects' performance on appropriate outside criteria before and after obtaining short, written samples, and examine the relationship of the different dominant response modes to the thinking processes employed by the subjects.

Human speech is one aspect of behaviour that communicates emotions, sensory experiences, memory, plans and one's assessment of events and objects (Gottschalk and Gleser, 1969). The nature of this communication is under frequent examination by researchers and educators. The framework of this study allows one to pose questions as to the interactions of linguistic habits and constraints imposed by the use of certain linguistic forms. The present study gave some indications that language habits or testing conditions may be shed in preference to certain cognitive patterns when short, written samples are considered. Further, when one is asked to alter one's views, these patterns do not seem to be disturbed significantly. Paivio (1963) also noticed that language constraints can be
ignored when other factors override the habitual use of the language.

This kind of approach could give several directions for future research. For example: Would the findings of the study presented here—that English-speaking high school students tend to select noun dominant modes of responding—primarily hold true for other language groups? This question would have to be considered in light of the contentions of some investigators that language largely determines the nature of perceptions or even the presence and detection of certain stimuli.

An illustration of this is possible by comparing the Navaho Indians to the English-speaking populations. Navaho being a verb-oriented language would not allow grouping into nouns or adjectives for the preferred response modes. The study of the Navaho language reveals that nouns or adjectives as distinct word classes do not exist (Kluckhohn and Leighton, 1948). To convey the meaning of most Navaho words, in English one must produce whole sentences. On the other hand, the Navaho can not readily generalize to abstract events like rain. While the English language allows a variety of ways to express that it is raining, the Navaho must make finer specifications to report whether he, himself, experienced the rain, or has reason to believe that rain has been falling for some time in his locality, or the experience of the phenomenon was conveyed to him by others.
Whorf (1940) argued that in English, we divide most of our words into noun and verb categories that have different grammatical and logical properties. Nootka, a language of Vancouver Island, then, seems to us to contain only verbs; this implies that the speakers have a monistic view of nature, and all kinds of events are treated through a single class of words. In Nootka, the English "house" may be "a house occurs", "it houses", etc. The Nootka terms are inflected for durational and temporal nuances. The house can thus be an enduring house, a temporary house, etc. These terms seem like verbs to the English speaker.

One can study the constraints of the language on the user under these conditions, but it is not clear if influenced by the language, the frame of reference was constructed to exclude certain types of stimuli or the absence of certain stimuli caused the language to develop along different lines.

Under the assumptions that verbs reference logical operations in the cognitive structure, the study of different language conditions within the Navaho could provide useful information if the above assumptions were correct. Nootka may also be useful for this kind of research.

The Navaho and Nootka findings raise the question of the frame of reference creating the environment, or if the environment precludes certain stimuli from ever becoming conscious and, thus, active in the awareness of the user of any particular language. The Whorf-Sapir concept of linguistic
relativity (Whorf, 1956), whereby language is considered as largely responsible for the organizing and shaping of experience, has not been settled, but it has been a source of fascination and much debate (Howell and Vetter, 1976, p. 360). A possible approach, using the model offered through this study, might be worth exploring further.

Another more practical consideration would be to investigate the consistency of dominant response modes of high school students over a longer time period. These findings could provide some understanding of how stable the dominant response mode of individuals would be over a school year; comparing this to grade point averages, IQ scores and personality measures could provide possible indicators as to the expected learning outcomes when lessons are presented through mainly noun, verb or adjective dominant presentations.

It is conceivable that the learning outcome may be partially dependent on teaching style. Teaching style is suggested here to be examined in terms of how the teacher presents certain topics. What are the dominant presentation modes of the teacher as compared to the students?

Would the teacher who uses highly differentiating and discriminating lecturing techniques be as effective in achieving the expected learning outcomes as the one using verb or noun-oriented approaches?

The possibility exists that particular topics are better presented through dominant noun responses than dominant adjective or verb techniques.
An instructional unit designed around the idea of intentionally controlling the balance of particular word classes during presentation of a topic could control the largely intuitional approaches used to design presentations.

Obviously, the ideas for further research presented here do not exhaust all the possible applications of the content analysis proposed here, but they do provide some directions future research might take.
REFERENCES


APPENDIX A

The Gottschalk-Gleser Method of Measuring the Magnitude of Psychological States

It is claimed that the relative magnitude of a psychological state can be validly estimated from the typescript of two to five minutes of speech of an individual (Gottschalk, 1975). Written samples produced in the same time limits tend to be shorter but provide similarly valid estimates.

Variations in the content of verbal behaviour can account for such psychological states as anxiety, hostility outward, hostility inward, social alienation, human relations, hope, achievement strivings, etc.

To determine the magnitude of any one psychological state at any one period of time, the scales rely on the following:

1) the frequency of occurrence of categories of statements;

2) the degree to which the verbal expression represents or is pertinent to the activation of the specific psychological state;

3) the degree of personal involvement of the speaker attributed to the relevant feelings, actions or events.

Mathematically, the degree of direct representation is indicated by the weighting factor. Higher weights, by
inference, indicate that the verbal sample is considered representative of strong, conscious experiences (feelings, events, etc.). Repressed or completely unconscious feelings of any kind are considered not to represent states of high magnitude, and are weighted zero. Each thematic category is assigned this numerical weighting which represents the relative probability that the thematic category is associated with the construction of the psychological state.

The product of the frequency of use of particular categories of verbal statements and the numerical weights assigned to each thematic category are used as ordinal measure of the magnitude of the psychological state. This means that when the speaker experiences greater emotional or feeling involvements, it is assumed that more references will be made to these experiences in particular thematic categories; thus, multiplying the weight of the category with the number of thematic statements will indicate the magnitude of the psychological state.

The rate of speech may vary from individual to individual, and the same individual may vary from time to time of testing. In order to compare verbal samples composed of different numbers of words, a correction factor is used. This correction factor expresses the score of the feeling state of the speakers in terms of a common denominator--the score per 100 words.
APPENDIX A (cont'd)

The HUMAN RELATIONS SCALE used in this study utilizes the correction factor by taking the total raw score and dividing it by the number of words spoken or written and multiplying this by 100. To reduce the skewness of the score distributions, the square root of the corrected scores is obtained. The authors claim that this method (square root transformation) tends to make the ordinal scale approximate the characteristics of an interval scale.

For more indepth study of the various scales developed by the authors, one is referred to the works cited before (Gottschalk and Gleser, 1969; Gottschalk, Wignet and Gleser, 1969).

The Human Relations Scale was developed with the purpose of providing a systematic instrument for a quantitative estimate of an individual's degree of interest in and his capacity for constructive, mutually productive or satisfying human relationships. Clinical impressions seemed to indicate that the relative magnitude of such a capacity or need was an important factor in how well patients responded to treatment, how successfully a person is advancing in his/her career, or even how well one learns in school.

Content categories include the following references: helping, supporting, protecting others; warm, loving, congenial human relations; missing others when they are away; manipulative, exploitive, competitive relationships; display-
ing and withholding affection, interest, approval, etc. (For more information and complete scale, see Gottschalk and Gleser, 1969, pp. 220-227).

Various content categories considered constructive in relating to other people were assigned positive weights while other categories like competition or aggression were assigned negative weights. It is possible to show a zero score on this scale if the negative and positive weights are balanced.

The authors reported several studies for validations of the scale. It was assumed that the Human Relations Scale was measuring a factor similar to the needs for affiliation and nurturance as measured by the Edwards Personal Preference Scale.

The correlations between scores on the Human Relations Scale and the affiliation, nurturance and succorance scales of the Edwards Schedule were reported to be .36, .53, .36.

Correlations with Scholastic Aptitude Test scores and first and second quarter grade point averages of college freshmen were found statistically not significant. On the other hand, couples with good marital adjustment obtained higher scores than couples with poor marital adjustment when tested on the Human Relations Scale. The couples were asked to make up stores jointly to four TAT cards.

In a preliminary investigation, an interscorer reliability of .85 is also reported by the authors for two independent
APPENDIX A (cont'd)

scorers. The results are considered highly encouraging by Gottschalk and Gleser (1969).
APPENDIX B

Form I (a/b)

PLEASE WRITE DOWN TEN WORDS. (Time: two minutes)

(fold line)

PLEASE RESPOND TO THE WORD BELOW. (Time: three minutes)

______________________

NAME ___________ GRADE ___________ MALE/FEMALE ___________
APPENDIX B (cont'd)

Form II (a/b)

NAME __________________________

WHAT IMPORTANT COMMUNICATION COMES TO YOU FROM

______________________________

______________________________

______________________________

________________________________________

(fold line)

TAKE A TOTALLY DIFFERENT STAND TO YOUR ORIGINAL IDEAS AND
EXPLAIN IT AS FULLY AS YOU CAN
APPENDIX B (cont'd)

SAMPLE: **VERB CONTROL**

STUDENT: MALE

FORM I: (a) today, Pack man, school, late, Renee, desk, work, pen, paper, name

VERB: 4/NOUN: 9/ADJECTIVE: 1

(b) Metal work, metal work: learning how to work with metal. Shaping, creating with your imagination, planning to make something useful. Different machinery to learn how to use, filing, grinding, sanding, forging, shaping all have to do with metal work.

VERB: 15/NOUN: 7/ADJECTIVE: 4

CLASSIFICATION ON FORM I: **VERB DOMINANT** (based on Part b)

FORM II: (a) Imagination is the most important thing in metal work or pretty well anything else, creating is equally important learning you get that while you work you need skills but not a great deal because you learn with experience. Shaping, use, make, all have to do with creating and imagination. To do refers to learning if you have all these you be good at what you do.

VERB: 18/NOUN: 10/ADJECTIVE: 5

(b) To be any good experience leads to everything else. Creating, learning, planning etc. I don't know.

VERB: 7/NOUN: 2/ADJECTIVE: 1

CLASSIFICATION ON FORM II: **VERB DOMINANT**
APPENDIX B (cont'd)

SAMPLE: NOUN CONTROL

STUDENT: MALE

FORM I: (a) kill, steal, school, soccer, sports, people, weather, sunny, hit, run

VERB: 7/NOUN: 9/ADJECTIVE: 1

(b) a line is something taught in math. It is a segment of points. A line doesn't have to be straight or any specific length.

VERB: 6/NOUN: 7/ADJECTIVE: 3

CLASSIFICATION ON FORM I: NOUN DOMINANT (based on Parts a and b)

FORM II: (a) something that is straight, an object, its here, problems, must do something, how long, part of something, goals

VERB: 4/NOUN: 7/ADJECTIVE: 2

(b) a line is slang for cocaine, two letters with an "i", to do with school, another term to do with math.

VERB: 4/NOUN: 9/ADJECTIVE: 1

CLASSIFICATION ON FORM II: NOUN DOMINANT
APPENDIX B (cont'd)

SAMPLE: ADJECTIVE CONTROL

STUDENT: MALE

FORM I: (a) deceive, homely, mystery, majestic, describe, homesick, dignified, crafty, because, modern

VERB: 2/NOUN: 1/ADJECTIVE: 6

(b) A futuristic world about motion and the act of moving. Motion, outerspace, futuristic

VERB: 1/NOUN: 5/ADJECTIVE: 2

CLASSIFICATION ON FORM I: ADJECTIVE DOMINANT (based on Parts a and b)

FORM II: (a) homely, forlorn, lonely, mystery, haunting, scary, crafty, sneaky, sly, futuristic, space, well developed. The future - there won't be one, motion, movement, moving, motion, modern-
everyday (meaning: old styled, common place)

VERB: 3/NOUN: 7/ADJECTIVE: 12

(b) Homely - like to stay around home and stay out of trouble. Mystery - a high point in a book.
Crafty - very good at things to do. Futuristic - everything made of plastic and other non-breakables. The future - full of nuclear wars.
Motion - a continual movement in outerspace.
Moving - . Modern - nowadays.

VERB: 6/NOUN: 13/ADJECTIVE: 11

CLASSIFICATION ON FORM II: ADJECTIVE DOMINANT