TEACHER ATTENTIONAL BEHAVIOUR

An Exploratory Study

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Douglas MacLean

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ABSTRACT

This investigation reports an ex post facto exploratory study of teacher attentional behaviour, in which a number of theoretically and methodologically, but not logically, independent measures of attention were employed. There is evidence to suggest that teachers differentially distribute their attention in the classroom, and that such distribution may have implications for their pupils. The concern, however, is not only with the way in which teachers do in fact distribute their attention, but also with the factors, internal or external to the teacher, which may pre-dispose them to attend to some features of the classroom stimulus situation, and not to others. Thus, it was expected that teacher biographical; attitudinal and 'stylistic' characteristics would play a role in the structuring of teacher attentional behaviour. Furthermore, it was expected that correlations would exist between the various measures of attentional behaviour utilised in the study.

All the teachers from two intermediate schools in a provincial area of New Zealand, participated in Phase One of the study, completing a Teacher Questionnaire designed to solicit teacher biographical information; several cognitive tests from the French Kit of Reference Tests for Cognitive Factors; a devised series of perceptual tasks, which required teachers to respond to a series of questions after viewing videotape extracts of teaching situations; and the Minnesota Teacher Attitude Inventory, which was included as a measure of teacher-pupil attitudes.

Phase Two of the study, focussed on the 'in situ' attentional behaviour of eight teacher volunteers, who had completed all parts of Phase One of the study. These teachers were then videotaped in their own schools teaching their own classes during social studies lessons. Teacher attentional behaviour in Phase Two of the study was operationally defined in terms of teacher verbal behaviour, in interaction with their pupils. Each incident or exchange between the teacher and his pupils was coded three times, for Target (to whom was the teacher directing his attention); Function, or purpose of the interaction; and Action (the nature of the exchange).

The analysis of the data revealed that there were no statistically significant relationships between the MTAI and the various attentional measures employed. Similarly, there only appeared to be chance associations between the Hidden Figures Test and most of the other variables utilised in the study, except that male teachers appeared to make significantly higher scores than female teachers. The Gestalt Completion Test, on the other hand, appeared to correlate significantly with most of the other attentional measures used (apart from the HFT), and with a number of biographical variables. Teacher 'in situ' attentional behaviour correlated with a number of biographical variables, and with the Gestalt Completion Test, but not with the HFT or the teacher responses to the video-tape extracts.

The relative independence of the HFT and the GCT suggests that they may be measuring differing levels of attentional processing; a link between these differing levels of processing and attentional style is proposed and discussed.

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Doug. MacLean

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CHAPTER I

INTRODUCTION

There is ample evidence which indicates that teachers distribute their attention differentially within the classroom, and that this distribution of attention has marked effects upon the students within the classroom (Good,1970; Kranz et al.,1970). Hargreaves (1972) furthermore, suggests that the teacher selectively perceives and interprets pupil behaviour in the light of his 'definition of the situation'. The pace of classroom life, however, is extremely rapid (Jackson, 1968) and demands are continually being made upon the teacher, not only from students within the classroom, but also by administrators and supervisors, among others, outside the classroom. This suggests that teachers rarely have time to consider their own teaching behaviour, and that in general, they are 'reactive' (Brophy and Good, 1974) to classroom and contextual stimuli.

The Problem

This exploratory study is not only concerned with the way teachers distribute their attention, but also with the factors which may pre-dispose them to attend to some features of the classroom situation and not to others. These pre-disposing factors may be internal to the teacher (for example, attitudes to children; attentional style) or they may be a function of stimulus salience (a fight, for example, in the far corner of the classroom). It may well be that teacher attentional behaviour as Brophy and Good (1974) infer, is a function of emergent precipitating factors which mask or dominate long term attitudinal and stylistic tendencies.

Little, if any research has been conducted exclusively and directly into teacher attentional behaviour. Many difficulties abound in any attempt to capture the 'act of attention', let alone understand the processes underlying attentional behaviour, particularly, such behaviour manifested in 'natural' settings. Essentially, the construct 'attention' has to be inferred on the basis of behaviour. This raises a number of inter-related

problems, including for example, a lack of consensus among researchers on the adequacy of indices of attention, and basic theoretical limitations which currently hamper progress within the field. These limitations and difficulties remain, despite or because of, the growth of theoretical work which has burgeoned over the past two decades. In addition, many of the tasks given to subjects in much of the experimental work into attention, have tended to be somewhat simplistic, and few studies into attention, particularly teacher attention have been conducted in complex stimulus situations such as classrooms.

Rationale

Despite what the 'de-schoolers' might say, teachers still have an extremely important part to play in the development of the nation's young people (Good, Biddle, and Brophy, 1975). Teacher attentional behaviour can have a marked effect on student school performance and self concept (Good and Brophy, 1973; Purkey, 1971), and indirectly, the student's life chances. Teachers, therefore, need to be aware of their own behaviour in the classroom, and perhaps more importantly, the reasons for their reacting in certain ways to some classroom events, rather than in others ways, and to other events.

Such reactions may be a function of a number of variables, including personal, biographical characteristics; personality and attitudinal traits; life and training experiences; and situationally specific factors. It could well be that among the situationally specific factors that function to determine teacher attentional behaviour, is the 'conditioning' of teachers (by their students) to respond to certain categories or classes of stimulus events (Barham and Boersma, 1975) and implicitly, to ignore others.

If in fact teachers learn to attend or perceive incidents in certain ways, then there are opportunities for the modification of such learnings, either at Teacher Training Colleges prior to entry into full-time teaching, or after entry into teaching, through in-service training courses.

The chain of inference among the 'presage' variables in the Dunkin and Biddle (1974) model of teaching influenced the sequential phasing of this research. The teachers in two intermediate schools in a provincial area of New Zealand completed in their own time, a Teacher Questionnaire which solicited information of a personal, biographical nature. The teachers also completed an attitude inventory which purports to measure teacher attitudes towards students. The assumption underlying the use of these instruments is, of course, that the teacher's background; his life experiences and his attitudes to students structures his attentional behaviour, particularly, in his exchanges with his students in the classroom.

A number of paper and pencil group tests were administered to the teachers. These were standardised tests which have been shown in the research to be linked with attentional style (Witkin et al., 1954;1962) and attentional processing (Pachella,1975). The tests were employed in this study to explore 'stylistic tendencies', or as Dunkin and Biddle (1974) prefer- 'teacher properties'.

The recognition, however, that paper and pencil tests may measure 'constructs' but not reflect actual attentional behaviour, led to the devising of a series of perceptual tasks, which attempted to measure teacher attentional behaviour in relation to the presentation and recall of complex stimuli. Three short extracts were culled from videotapes of teaching-like situations and combined into the one videotape for presentation to the teachers. After each extract was shown, teachers then, completed a series of questions relating to the extract presented. This latter series of tasks presented a number of problems not encountered usually in the administration of standardised tests.

All teachers in the two intermediate schools were asked to participate in the above activities- this constituted Phase One of the investigation. Phase Two of the study extended the Dunkin and Biddle (1974) inferential chain of 'presage' variables, which are concerned with the examinable characteristics of teachers

thought likely to affect teaching behaviour, into a study of teacher attentional behaviour in the classroom. It was planned, therefore, to film a limited but equal number of teachers from each of the two schools, and to measure the 'in-situ' attentional behaviour of these teachers.

The assumption, then, is that teacher attentional behaviour is a function of a multitude of influences, but for the purposes of this study, it has been operationalised in terms of the various methods and approaches employed in the research. It would be expected that positive correlations would exist between the various 'attentional measures'. Furthermore, consequent upon the shift from paper and pencil measures to the in-situ measurement of attentional behaviour, the correlations would tend to decrease in magnitude, but should remain positive. In other words, as the emphasis moves away from the measurement of specific attentional skills, to the measurement of generalised classroom behaviour, there is paradoxically, the possibility of the longer-term, relatively stable stylistic tendencies, being submerged by highly specific classroom events and incidents.

Chapter Two reviews current research into attention and perception, in particular, the role of the 'orienting response' and some current models of attention. The theoretical exploration of the construct'attention' continues with a proposal linking the work of Broadbent (1958;1971) and others, notably Keren (1975; 1976) into levels of attentional processing, with research into attentional style.

The third chapter, on the other hand, moves away from the theoretical aspects of attention explored in Chapter Two, and is concerned with a review of some of the in-situ classroom research. Chapter Three essentially, focusses on some of the features of the classroom environment which assist in the structuring of teacher attention.

Chapter Four outlines the methodology; the procedures and instruments utilised in the research. The relative length of

of this chapter is dictated in part by the fact that instruments and procedures had to be devised for the collection and analysis of much of the data. Chapter Five, very briefly outlines some of the characteristics of the sample subjected to the'testing' and discusses some of the statistical procedures used in the analysis of the data.

The results of the investigation are presented in Chapter Six. First of all, the results of Phase One of the investigation are presented- these, for the total (reference group) population of teachers. Then, secondly, the results emanating from the filming of the eight teachers who comprise the target group, are subjected to scrutiny in terms of the variables outlined in Phase One of the research.

The final chapter discusses the results, drawing out and commenting upon the conclusions and indicating some of the implications not only for research into attention, but also for teacher attentional behaviour.

CHAPTER 2

PERCEPTION AND ATTENTION

Preview

This chapter briefly discusses the nature of perception and stages of perceptual analysis, concentrating, towards the latter part of the chapter on a review of some of the research into attentional processes. A link between these attentional processes and attentional style is proposed.

Introduction

Research evidence (eg. Jackson, 1968; Jackson and Lahaderne, 1967) indicates that classrooms are extremely busy places, with teachers tending to dominate verbal exchanges with their pupils (Adams and Biddle, 1970; Hudgins and Alhbrand, 1969). The quality and quantity of these exchanges has been shown to affect the scholastic-life chances of pupils (Rist, 1970) and the pupil's self-concept, particularly, in relation to academic achievement (Purkey, 1971). Teachers' expectations have also been shown (Brophy and Good, 1974) to play a crucial role in these exchanges with pupils.

Teachers, however, are not only active and re-active in their relationships with their pupils (Smith, 1963), they are ostensibly the planners and controllers of instruction (Strasser, 1967) and managers of the classroom environment (Good and Brophy, 1973; Kounin, 1970). Teacher activity within the classroom is a function of many variables, not the least of which, is his perception of classroom events, including pupil behaviour. Hargreaves (1972) suggests that the teacher selectively perceives and interprets pupil behaviour in the light of his 'definition of the situation'. Therefore, how the teacher sees what is happening within the classroom, and its meaning for him, to a large extent determines his behaviour, particularly with regard to his pupils. An understanding of what the teacher perceives within the classroom, and especially what he attends to, are fundamental to any comprehension of teacher behaviour.

Perception - A Brief Overview

At any given moment, the individual is being bombarded by a multitude of stimuli, yet only a few of these are ever perceived clearly. Other stimuli or events which are not so clearly perceived tend to form a hazy background. In other words, the individual attends to only part of what is happening around him. Perception involves a number of inter-related processes, of which attention is only a part, and yet, many of the assumptions implicit in perception, and many of the concepts and ideas current in perception, are functional in the area of attention. It is only within the last decade, or so, that 'attention' has really been separated from the broad field of study that is perception. A study of perception, albeit a brief one, provides a background against which a review into aspects of attentional processes can be undertaken.

Perception - Some Assumptions

Implicit in the notion of 'perception' are a number of inter-related assumptions. It is, first of all, assumed that there is a world- a reality- outside the individual. This world it is assumed, is knowable to some extent by the individual. Differences between 'knowing' and believing' (Scheffler, 1966) may be irrelevant to the individual in his commerce with his world- eg 'the self-fulfilling prophecy (Merton, 1957).

The very pervasiveness and existence of the 'self' concept (Horney, 1936; James, 1910; Jourard, 1958; Purkey,1971; to name a few) almost by definition, gives tacit 'evidence' of the existence of the 'non-self' - the world outside the individual. Piaget believes that over time, the young child begins to discover that he himself is an object- an object in a world of objects. From this, Piaget assumes that the child develops the notion that the external world is stable and independent of his perceiving of it; together with the related assumption that others have much the same experience of the outside world, that he has.

It is further assumed in the literature (Galanter, 1962; Stevens, 1961; for example) that the knowable world outside the

the individual is mediated by physical stimuli which impinge on sensitive receptors of various kinds within the human organism. Correlatively, it is assumed that these sensitive receptors respond to some stimuli and not to others. There are structural limitations within the individual's receptor system which restrict the range of stimuli to which the individual may respond. Information, it is assumed, arrives from the environment or world outside the individual as physical stimuli of various kinds (eg. light and sound waves; mechanical pressure) and if these energies have sufficient impact, they are changed into nerve impulses which travel up through the sensory nerves towards the central nervous system. There is some evidence of initial structuring of physical stimuli by the receptors (eg. research into Mach Bands, Ratliff, 1965). In addition to this initial physiological coding (Travers, 1972) at the receptors, it is assumed that this sensory data is transformed into 'meanings' which are individually-appropriate and which thereafter structure the behaviour of the individual.

Perception is not only concerned, however, with the individual's awareness of the objects and conditions about him, and the impressions these make upon his receptors, but is also concerned with an 'understanding' awareness of the meaning of these objects (Allport, 1955) Rundle (1972) in a similar vein, argues that any account of perception must have regard to the knowledge or belief which it involves and cannot be thought of simply in terms of responses to physical stimuli. Pachella (1975) found that the questions asked subjects in the well known vertical-horizontal illusion, structured their reports of the illusion. If asked to describe their experience, subjects tended to give 'subjective' reports; whereas, if they were asked to describe the stimulus object, their reports tended to be 'objective', (these reports, however, could be culturally determined, see Vernon, 1969). Two related problems are raised here. One concerns the objective-subjective elements in perception, and inherent difficulties in the 'measurement' of perception. The other problem concerns the individual's relationship with the world 'out there'. Is the individual a passive receptor system reacting only to incoming stimuli, or does he take a more active role in relation to his environment?

It may be, that much of the debate between the Behaviourists and the so-called Third Force Psychologists (Jourard, 1968; Rogers and Skinner, 1956); between laboratory and field experimentation (McGuire, 1967; Swingle, 1973), and between those basically concerned with qualitative data (the clinicians) and those concerned with 'quantitative' data (experimentalists) may in fact represent fundamental differences in conceptions of 'science' and of the nature of man, rather than mere differences in methodology or approach. Gordon Allport (1955) wants to argue that on the whole, psychologists, whether they are aware of it or not, tend towards one end or other of a passive-active continuum view of the individual, depending on whether they tend to the views of Locke or Leibnitz.

According to Allport, the Lockean tradition assumes not only the individual to be 'tabula rasa' at birth, but also that the intellect is essentially passive in nature, acquiring content and structure through the impact of sensation and the crisscross of associations. The emphasis in the Lockean tradition is on the 'scientific'; empiricism; the objective and the measurable; 'hard-nosed data'. Since the mind is by nature, tabula rasa, it is not the individual himself, but what happens to him from the outside that is important- causality remains external to the individual.

The Leibnitzian tradition, by contrast, assumes the intellect to be perpetually active, in its own right, addicted to rational problem solving, and bent on manipulating sensory data, according to its own inherent nature. Allport maintains that concepts of 'closure', 'self-distribution', 'Pragnanz' and 'insight', all call attention to the inherent activity of this intellect that moulds, arranges and interprets sensory data in ways not allowed for by theories derived from Locke and Hume.

Differences between the Lockean and Leibnitzian traditions inevitably colour the nature of the questions asked in any 'scientific' enquiry, thus thereby placing a structure on the answers likely to be received. The nature of the questions asked, in turn, determines to a large extent the methodology to be

utilised and in turn, tends to specify the data to be regarded as legitimate and valid, and hence to be taken heed of, in the 'scientific' project. These differences in approach as polarised in the Lockean and Leibnitzian positions permeate all the social sciences, including psychology and the psychology of perception and attention.

A large number of theories have been proposed (see Allport, 1955) to account for the way in which the individual transforms sensory data into meanings which are appropriate and which if veridical (Bruner, 1973) lead to adaptive behaviour (Travers, 1972). Wickelgren (1969) for instance, stresses the conversion of sensory data into inner speech. Solley and Murphy (1960) discuss the role of expectations in the structuring of sensory data, and Gibson (1966) has long emphasised the connection between perception and memory.

Gibson (1969) suggests that there are three basic categories of perceptual learning. There are theories which tend to be cognitively orientated, since the mediating processes are described in cognitive terms- inferences; hypotheses; or problem solving. The cognitively orientated theories mainly assume an inferential process as the basic concept. Brunswik (Brunswik, 1955; Postman and Tolman, 1959) assumes that these inferences are similar to those made in gambling- the individual is perpetually in the process of making guesses or bets on the basis of the information reaching the sense organs. The individual has to reconstruct the world out there on the basis of this information, a great deal of which is uncertain. For Bruner (1957) problem solving is the model of perception. The individual is presumed to allocate stimuli from the environment into categories by a sequence of operations, including hypothesizing; trial and check; and matching to existing categories. The accessibility of a given category, and thus the likelihood of a given percept depends upon the individual's past experiences; the likelihood of a given input, and the individual's needs. Gibson suggests that Piaget represents the cognitive theories which utilise the construction of schemata- an interaction between the human organism and his environment. As growth and development proceeds, Piaget believes that

perceptual activity is increasingly a function of intellectual processes. If the Lockean-Leibnitzian dichotomy is expanded to include a middle point, then Brunswik would tend to the Lockean pole; Piaget to the Leibnitzian pole, with Bruner tending to the middle-right.

The second broad category of perceptual learning theories Gibson calls 'Response-orientated'. The response theories assume that association is the essential mechanism of integration. Hebb tends to represent this view. Hebb conceived that the first visual experience is an impoverished chaos, in which objects have nothing more than the quality of 'primitive unity', which, figuratively, is the speck of innate capacity necessary to allow an organism to distinguish an object. In order to 'know' the object, the organism has to be repeatedly exposed to it. Sensory processes are to be distinguished from perceptual processes, which depend upon mediation and learning. Hebb undertook to explain the essential characteristics of perception through reference to the development of, changes in, and connections in between neurons at the synapses where impulses are passed from one neuron to another (Weintraub and Walker, 1966).

The third category of theories, Gibson calls 'stimulus-orientated theories. This category is represented by Gibson's own theory, and she suggests that three processes are required for perceptual differentiation. These are abstraction of differential properties of stimuli; filtering out of irrelevant variables of stimulation; and selective attention of the sense organs (similar in many ways to the orienting mechanism or response). Dember and Earl (1960) have proposed that perceptual activity is and end in itself, and that if the individual is given a free choice, he will choose to attend to or interact with the preferred stimulus. The preferred stimulus is one which is complex rather than simple. In their theory, any stimulus that is less than complex will never be chosen. Thus, the individual, according to Dember and Earl, as he continually or repeatedly interacts with a set of stimuli, will come to choose stimuli which are progressively more complex, by objective standards. To what extent the individual is in control of his own processes, as suggested by Leibnitz, and to what extent he is captured by complex stimuli, in the

Dember and Earl model is not clear.

Gibson, in her model, tends not to go 'beyond the information given', but is more interested in the extraction of more and more detail from the stimulus. She asserts that perceptual learning is not by association but by active exploration and search. The search is directed by intrinsic cognitive motives and the products of the search are a reduction in the amount of information to be processed. It is difficult, however, to recognise 'insight'; 'closure' and the like, in her ideas.

Perception and Reality

Bartley (1969) suggests that perception is an immediate expression of the relation of the organism to its environment. This, according to Bartley includes overt responses expressed not only in conscious reactions, but also in terms of muscle activity. Kahneman (1973) sees the existence of a dynamic two way process of interaction between the organism and its environment. Kahneman suggests that the organism is active in controlling the stimuli in the environment that will be allowed in turn, to control its behaviour. The human organism is selective, therefore, in its perceiving.

Good and Brophy (1973) indicate that on occasions, individuals think that they see reality (the world out there) but in fact their biases, past experiences and prejudices lead them to interpret what they see, and this may not be congruent with reality. Adams and Biddle (1970) believe that any researcher attempting to describe reality is constrained by the way he habitually looks at things. Bredemeier and Stephenson (1962) in their discussion of the nature of culture, highlight the famous aphorism of Walter Lippman- that human beings respond to their definitions of things- of stimuli- rather than to the stimuli per se. William James put it another way- we do not see the bear, become frightened, and run away; but rather, we see the bear, run away and become frightened. Sperling (1960) pointed out, we recognise only a small part of what we see.

Research has shown that perception can be modified by conversion processes (Becker, 1963); group pressure (Asch, 1952; Sherif, 1936); by the influence of significant others (Epstein and Koromita, 1966); through ecological demands (Berry, 1972); through legal stigma (Schwartz and Skolnick 1962); and group-held definitions of 'in' and 'out' groups (Feldman, 1968). In addition, values and interests, including prejudice have been shown to structure perception (Postman et al., 1948; Secord et al., 1956; Seelman, 1940). Similarly, physiological needs have been shown to affect perception (Beams, 1954; Gilchrist et al., 1952; and Lambert's 'cookie-effect', Lambert et al., 1949).

Vernon (1971) after summarising and reviewing a number of experiments into the effects of value and interests on perception, indicates that in ambiguous situations, value and interests will bias perception. Positively valued material, for instance, may be perceived, apparently, in such a way as to accentuate certain irrelevant qualities of the material (eg - size). In general, it seemed those who were rewarded, or who experienced success in a task, had some tendency to attend preferentially to the related material, or to the rewarded or successful situation. Vernon, cautions, however, against a too hasty an interpretation of this data. He suggests that this type of inaccuracy may occur to a small extent in everyday life, but is doubtful whether such distorting effects would occur in those, clearer or less ambiguous situations usually encountered, especially where correctness of perception is important, and particularly where there is the possibility of feedback with regard to the accuracy or otherwise of their perceptions. Mackworth (1970) reports that in tasks requiring vigilance, or tracking behaviour, or continuous threshhold measurements, decrements in speed and accuracy of responses have been noted.

Perception, is according to some views, concerned with making guesses as to what is 'outside, there' (McCollom and Badore, 1973) or perhaps more correctly, perception is concerned with understanding the way in which the organism transforms, organises and structures information arising from the world in sense data or memory,

(Carterette and Friedman, 1974). Perception is then, both an achievement and a construction (Morgan and King, 1971) Kahneman (1973) describes perception as the achievement of a set of interpretations. These interpretations are more or less the end-point of the perceptual process. Attention functions in determining which objects and events perceived in the world outside (at the receptors and initial processing) shall move through to further stages of perceptual processing, whose end result, is the achievement of interpretations. Models of attention and their relation to the overall perception process will be discussed in the next section of this chapter. Attention as the term is normally used, implies that there is a selective process in the taking of information from the outside world into the individual's perceptual system (Travers, 1972).

Attention - Early History

A number of writers (eg. Broadbent, 1958; Moray, 1969) have commented on the long history and recent past of the concept 'attention'. Norman (1969) quotes one of the written rules of memory, circa 400B.C.-

"This is the first thing; if you pay attention, the judgement will better perceive the thing going through it."

Boring (1970) suggests that there is not only one early history of attention, but ten! In his analysis of the early work into attention, he identifies ten overlapping areas of research which fall under the rubric- 'attention'. Boring gives a short bibliography for each of the'little histories' and interested readers are referred to his paper.

The interest in attention was considerable during the first decade of this century. Titchener (1903) systematically listed attention-getting factors (intensity; extension- in space; duration and cessation; repitition; suddenness; novelty and movement) markedly similar to the modern so-called external determiners of attention. But not only did Titchener have regard for the external determiners of attention, he also listed factors internal to the individual, factors very similar to present-day ideas of the so-called internal determiners of attention- mood; motivational state; anxiety; interests and so on.

James (1890) used the words 'focalisation' and 'concentration' to describe the essence of attention. Pillsbury, on the other hand, believed that the manifestations of attention were 'protean', and the ramifications of the concept so widespread, that experts at that time defined the term 'attention' as a'state of muscular contraction and adaption'; as 'pure mental activity'; as an 'emotion or feeling'; and as 'a change in the clearness of ideas'. Pillsbury (1908) even suggested that the concept of attention was the centre of the entire psychological system.

'Attention' did not in fact become the centre of the psychological universe, for research into attention waned considerably from about 1920, until its revival as a respectable topic within psychology in the late 1940's and early 1950's. The renaissance was enhanced by the appearance of Broadbent's work (1958) which was instrumental in the generation of a great deal of research activity.

A number of reasons have been suggested for the banishment of 'attention' to the psychological wilderness for thirty years. Prominent were real concerns about the difficulties of obtaining objective, valid and reliable data. Other problems of methodology and development of adequate conceptual systems (Moray, 1969) were also advanced as reasons for not continuing work into the area. There were also real disagreements, or in-fighting among introspective psychologists (Broadbent, 1958). The greater sophistication of electronic technology (for example, the use of tape recorders, digital computers, and the like), plus the growth of information--theory as a social science; the advent of the 'cold-war' with the need for research into vigilance, all assisted the return of 'attention' as a research topic. Furthermore, the use of operational definitions allowed the undercutting of the difficulties inherent in the appeal to introspection, markedly assisted 'Lockean' orientated psychologists to accept the construct 'attention' more readily. Paradoxically, there was a growing dis-enchantment with 'hard-nosed' behaviourism, and the concomitant rise of humanistic and cognitive psychology, which assisted in the generation of interest in this area.

The concept 'attention' came of age, at the first "Attention and Performance" conference held in the Netherlands, 1966. Yet, it was James (1890) who suggested that the immediate effects of attention were to make the human organism-

a..perceive;
b..conceive;
c..distinguish;
d..remember; and
e..shorten reaction time-

a description which in essence is still valid today. Much of the early work into attention was descriptive. There has however, been some change in emphasis since the Second World War. Features of the changed perspective have been a move toward more theory building, particularly, of theories of the 'middle-ground', rather than global theorising which tended to dominate early psychology; and a shift to a more prescriptive stance, though perhaps, not with as much success as might have been hoped (Egeth, 1967; Keren and Skelton, 1976).

Physiological Aspects of Attention

Teachers continually demand the 'attention' of their pupils. Attention in this regard tends to be associated with bright-eyed pupils, in eye-contact with their teachers, ready to pick up all truth and wisdom offered! Lahaderne (1968) showed, however, that behavioural indices of attention were no real guide to pupil satisfaction with school. Pupils are past masters at learning appropriate behaviours! Behavioural indices of attention are extremely difficult to construct with any reliability, let alone validity. Hence, there has always been a great deal of interest in the obtaining of physiological indices of attention. It had been hoped that physiological measures could be obtained with objectivity, and that the results obtained would be reliable and valid. In attentional research, indices of arousal- heart rate; pupil dilation; blood pressure; skin conductance, and brain activity- have been typically utilised. The hope, however, of a fully objective index of attention utilising physiological measures has not been realised to date. The hope may be realised, in time, with increasing technological sophistication, and better control of experimental procedures.

A number of descriptions of attentional components previously advanced (eg. Bartley, 1969) include a broad based set of physiological responses which apparently functions to prepare the individual for both a better reception of stimuli (threshhold lowering) and response to stimuli. Responses may be either unconditioned or conditioned responses to signal stimuli, such as a warning cry, or the calling out of one's name. This functionally related system of responses called the orientation reaction (response or reflex) is believed to indicate detection of stimuli change (Barham and Boersma, 1975).

Orientation Response

The orienting response (OR) was first referred to by Pavlov, who in 1927 described it as 'the reflex which brings about the immediate response in man and animal to the slightest changes in the world around them, so that they immediately orientate their appropriate receptor organ in accordance with the perceptible quality in the agent bringing about the change, in readiness to making full(er) investigation of it', (Van Olst, 1971).

Sokolov (1960) describes the OR as a non-specific reflex evoked by any (perceptible) stimulus change and extinguished through habituation upon repitition of the same stimulus change. Most writers agree that the main components of the reaction pattern include-

a..changes in the muscles, manifesting themselves in increased muscle tonus and receptor orientation;
b..increased sensory sensitivity (threshhold lowering);
c..increased cortical arousal;
d..reactions in the autonomic nervous system, including decreased electrodermal resistance; vasoconstriction in the extremities; vasodilation in the forehead; changes in the heart rate, rate of respiration, and pupil dilation.

Travers (1972) presumes that maybe one possible function of the OR, is a clearing away of whatever information is being held in the trace system. Travers' notion is that if traces existed and continued to exist in the memory system, then there may well be confusion between old traces within the trace system and the new, in-coming information that the orientation response is preparing the individual to receive.

Orientation Response and Attention

Mostofsky (1970) discusses the relationship between the OR and the concept of attention, and indicates that careful investigators of the OR take pains to specify the particular nature of the reflex, and that it should not be confused with other, more general orientations (Lynn, 1966; Maltzman, 1967; Sokolov,1966; Veronin et al., 1965) or with other, special defensive reactions (Boiko, 1965). Zaporozhets (1965) has, however, been prepared to assume a considerable degree of identity between the OR and some attentional processes. Berlyne (1960) and Mostofsky (1970) have cautioned against the glib equation of the OR and attention. Kahneman (1973) wants to distinguish between autonomic responses which occur as a result of the OR, where the allocation of attention is involuntary, and governed by enduring dispositions and the allocation of 'voluntary' attention, in cases where the subject is instructed to make decisions and execute specific responses to stimuli. Barham and Boersma (1975) suggest that responsible interpretation of the function of the OR does seem to allow a place for the construct in a description of some intensive and selective aspects of attention. Acceptance of this view, they further suggest, may have implications for the educational researcher tackling some of the major problems surrounding teaching and learning behaviours.

Orientation Response and Physiological Indices

Berlyne (1960) and many others (eg. Allen et al., 1963; Hays et al., 1964 and Williams, 1963) have investigated OR-evoking characteristics of stimulus changes. Novelty has been shown to be a determinant of OR (Sokolov, 1966b). Fried et al. (1966; 1967) in a related series of experiments found however, that there was no significant differences between control and experimental groups in terms of their electrodermal resistance (GSR) as plotted against a series of stimulus presentations. It appeared that neither the position of the stimulus in a sequence, nor its elimination or substitution was found to produce any effect. As a result, they concluded that novelty is not a fact, but a dimesnion which is but little understood.

Furedy (1968. 1969) however, pointed out that there were differences in the measurement of novelty and the response categories utilised by Sokolov (1966b) and Fried et al. (1966;1967). Berlyne et al. (1968) suggested that subjective uncertainty will intensify the OR. Blurred pictures were shown to cause more prolonged blocking of alpha rhythms than clear pictures; there were however, no differences in GSR. Sokolov (1963b) and Asafov (1968) have found J-type correlations between the magnitude of the OR and stimulus intensity, whereas, Uno and Grings (1965) and Leavy and Geer (1967) among others (Davis et al., 1955; Hovland and Riessen, 1940) found linear relationships between the OR and auditory stimuli over a wide decibel range. Weiner and Feltman (1967) introduced a visual stimulus into an on-going auditory vigilance tasks. Vigilance was impaired to an extent that decreased with increasing exposure time of the visual stimulus. They suggested that first of all, the new visual stimulus takes up channel capacity, but with increasing exposure time, the novelty of the new stimulus decreases. They argued that the novel stimulus evoked an OR which was stronger than the on-going behaviour.

Investigations of the OR have been primarily directed to heart rate; GSR and vasomotor responses. Barham and Boersma (1975) conducted a series of four factor-analytic studies into the OR construct, utilising GSR; pupillary responses, and eye movement. They found that children and adults tended to differ in terms of their factor patterns on the sixteen variables under investigation. Their interpretation of the data suggested a lack of support for Sokolov's account of the orientation reaction in which distinct phasic and tonic aspects could be differentiated among pupillary responses. They preferred to interpret their observations as indicating that the functioning of the pupillary responses was sensitive to a variety of stimuli, and task conditions presented. They suggested that there was strong task specificity, or to use Lacey's (1967) term- 'situational stereotypy'.

Barham and Boersma (1975) believe that their results are consistent with those of Berlyne (1967) and others including Lacey (1967) who suggest that the relationship between physiological and

psycho-motor responses might best be conceived in terms of a multi-dimensional model, rather than a uni-dimensional model of the OR (or for that matter, of the arousal system). They believe, furthermore, that the construct 'OR' needs additional elaboration, mainly to accommodate more dissociation among component responses, or that possibility of the reactions among components which normally interact together, differing. Whilst the GSR functioning appeared to fit the usual model of orientation behaviour reasonably closely; the same was not true for pupillary and eye-movement responses. Kahneman (1973) believes that the OR should be viewed as a loosely organised set of physiological changes, each independently controlled by some aspect of the stimulus situation, and of the response to that situation. There is an increasing number of psycho-physiological experiments that demonstrate that different patterns of somatic response emanate from different stimulus situations (eg. Schachter, 1957). Lacey's point is that 'stereotypy' adheres not in the characteristics of the stimulus, but in the interaction between the stimulus and the subject.

Orientation Responses and Learning

Barham and Boersma (1975) indicate that if the multi-dimensionality of the OR is accepted as a valid conceptualisation, real limitations are placed on the generalisation of orienting behaviour, particularly those generalisations concerning different stimulus conditions, response domains and age differences. There has, then, been a shift in conceptualisation away from the OR being conceived as purely reflexive behaviour, to the view of behaviour possibly open to modification by learning and by environmental pressures. Barham and Boersma point out some of the suggestive and important implications for teaching with particular regard to the behaviour of children. There are, however, implications for the modification of teaching behaviour, in exactly the same way- habituation to novelty; the extinguishing of some orienting behaviours, and the reinforcing of others. These could well be taught within teacher training colleges.

Basically, the orienting response functions to prepare the individual for incoming sensory data. Sokolov indicates in his

neuronal model, that incoming data are analysed at the cortical level before the decision is made to activate the OR. Kahneman (1973) points to enduring dispositions which govern involuntary attention, and Barham and Boersma (1975) findings are indicative that even at this fundamental level, the possibility of learning exists. Classroom life may unwittingly be conditioning teachers' orienting responses to particular categories of stimulus classes and events and not others. If this be true, it suggests that Mostofsky may be wrong in dismissing the possibility of a real contribution of the OR construct to the theory and data of attention, (see also the comments by Mackworth and Otto, 1970). It would be improper, however, to equate the OR with attention.

Orientation Response and Individual Differences

If learning is a possibility in the operation of the OR, then the correlation of the OR 'scores' with measures of individual differences becomes an area of great research potential. It may well be that 'orientation' to tasks, along with intellectual ability and other entering variables are crucial in understanding learner behaviour. Stuart and Offenbach (1973) suggest for example that whilst there are strong situational and task dependent characteristics that inhibit learning, there are also in-appropriate attentional habits. It may well be that this is a function of inappropriately conditioned OR's. Other research indicates (Luborsky, 1967) that the OR correlates positively with the individual's intake of information. He found, for instance, a positive rank correlation between the number of Rorschach responses and the mean score on ten vasomotor responses. He also found a negative correlation between the mean score and deviation from the vertical, as measured on the Witkin Rod and Frame Test. Roessler et al., (1963) and Greenfield et al., (1963) found that higher scores on the Barron Ego Strength Scale of the MMPI correlated positively with stronger GSR's and digital vasomotor responses to standard tones. This held not only for response amplitudes but also for response duration. Koepke and Pribram (1966;1967) found a significant correlation between spontaneous activity and scores on the Taylor Anxiety Scale (TAS), and between TAS scores and habituation rate. Other research into the social-psychological factors affecting the OR have been conducted by Kaplan et al (1965); Nowling et al., (1968); Shapiro and Leiderman (1965) and by Costell and Leiderman (1968).

The Orientation Response - Summary

The construct 'OR' lies at the interface of a number of pursuits within psychology, including attention; motivation; reflex response to novelty, and is used as an indicator of arousal. Its links with Russian psychology and classical conditioning may have been instrumental in its comparative neglect within the field of attention. The Barham and Boersma emphasis on the multi-dimensionality of the construct, with the implicit move away from a simplistic approach, may paradoxically, enable it to have greater acceptance among psychologists interested in attention.

The OR by definition is a response to stimuli, however, crude that response may be. Prior to its onset, it appears there must be some processing of sensory data, perhaps as Sokolov suggests,at the cortical level. There is evidence to suggest that learning may well intervene, even at this fundamental level. If this is so, there are implications for teaching and learning. An appropriate name for the initial processing of sensory information prior to the activation of the OR may be 'pre-attention'. This suggests links with the models of attention to be discussed later on.

Pre-Attention - Some Recent Research

Neisser (1967) suggests that pre-attentive mechanisms appear to operate at a preliminary stage of perceptual processing with rapid and relatively imprecise processing. Pre-attentive processing involves detection of physical features, grouping and localising the whole percept, and monitoring for critical features which may require the later, more sophisticated level of processing, Neisser calls, focal attention. Neisser believes the effects of the pre-attentive processes are limited to the immediate present, and that more permanent storage of information requires an act of attention. There are two kinds of bodily movements, which Neisser believes are under pre-attentive control- guided movements, and re-orientation movements, particularly, of the head and eyes, (from one stimulus to another, in a similar manner to the orientation reaction). Focal attentional processing, as opposed to pre-attentive processing, is said to be slower, but provides more detailed information and elaboration.

Support for Neisser comes from at least two distinct sources. Beck (1972; Beck and Ambler, 1972) proposed that grouping is often based on the detection of differences between elements in peripheral vision, prior to focussing of attention. These discriminations are not guided by the perceiver's intentions. Pre-attentive discriminations refer to obvious physical features, but as Kahneman (1973) points out, it would be incorrect to infer that all physical discriminations occur at the pre-attentive level. Beck's work suggests that these discriminations occur at both pre-attentive and attentive levels, but follow different rules at the two levels. Keren (1975) raised questions about the conditions under which the two processes outlined by Neisser (1967) occurred, and suggested that maybe these two processes were related to a distinction between two kinds of stimulus material, first proposed by Broadbent (1970).

One type of stimulus array, labelled 'stimulus set' permits selection among its elements on the basis of physical features which are inherent within the stimulus (eg. selecting a red letter from an array of red and black letters). Elements within the other type of stimulus material, labelled 'response set' cannot be distinguished solely on the basis of physical features, but rather on the basis of meaning (or additional information) that is covered by the stimulus (eg. selecting a particular digit from an array of digits and letters).

Keren (1975) suggested that stimulus set material may be handled by pre-attentive mechanisms, whilst response set material requires focal attention. It should be emphasized, however, that the distinction between stimulus and response set material is not an absolute one, and that probably in most real life situations, the decision of whether a certain situation is of a stimulus or response set nature, and accordingly, whether pre-attentive or focal attention is the dominant process should be made on a relative scale. Keren (1976) finds support for the Neisser (1967) notion that pre-attentive mechanisms operate in parallel, whereas, focal, attentional processing is serial in nature. Keren also found support for the Broadbent notion that stimulus set and response set material require different levels of processing.

Broadbent (1971) further clarified the concepts of stimulus and response set. He equates stimulus set with 'filtering' (Broadbent, 1958), where certain items are selected for analysis and response on the basis of some common characteristic in the stimuli. He suggests that instructions are given prior to the on-set of the stimuli, designating which types of stimuli are relevant and which are irrelevant. In other words, the instructions given to the individual function to orientate him to relevant stimulus characteristics, which in turn function to control behaviour.

The instructions given to individuals may be given verbally in experimental situations, as follows- "Listen to this voice and repeat whatever it says regardless of any other sounds you may hear". On the other hand, it may be that instructions may be built in by for instance, conditioning or learning, so that the individual actively selects stimuli to which he will respond. The Barham and Boersma (1975) material previously discussed, suggest that learning may well operate at the pre-attentional level.

Response set or pigeon-holing, is seen by Broadbent, as requiring additional processing for meaning. The subject in response set experiments is typically presented with a wide range of stimuli, and is instructed to respond to certain items only. In other words, the allowable responses are limited, whereas, the stimuli presented are not. For example, a subject may be asked to listen to a medley of voices and to repeat any digits heard. This requires that each stimulus must be examined, thus making the rejection of irrelevant items a laborious process, and thus making greater demands on the attentional processes.

In terms of Broadbent's (1958) theory, sensory data impinge on sensory receptors where the initial selection takes place, through what he calls, the 'S-system'. This system is similar to Neisser's pre-attentive mechanism, where parallel processing takes place.

Serial processing occurs, according to Neisser in focal attention, and this is similar to Broadbent's notion of the 'P-system'. The requirements for response set analysis are best met in the P-system

where attention processes require in Neisser's terms 'constructive activity'.

Pachella (1975) discusses the differences between 'analytic' or informational extraction processes of attention, and the 'synthetic' or interpretive processes of attention. There are marked similarities between Pachella's 'analytic' processes, which concern the extraction of cues and features from the stimulus, and Neisser's pre-attentive mechanisms and Broadbent's S-system. The 'synthetic' processes outlined by Pachella resemble Broadbent's P-system and Neisser's focal processing. Pachella wants to argue that the two processes- analytic and synthetic- follow different rules, similar, perhaps to proposals by Beck (1972) and Keren (1975;1976).

The research discussed points to the existence of pre-attentive mechanisms, which appear to follow different rules from attentional processes. It appears that learning may affect these pre-attentive processes, and some of these implications for teachers have been outlined by Barham and Boersma, (1975).

Modern Theories of Attention

In the previous section of this chapter, evidence was presented for the existence of pre-attentive mechanisms. It was suggested that these were open to modification by learning and environmental pressures. The place of these pre-attentional mechanisms in theories of attention will now be briefly discussed.

Broadbent's Filter Theory

Basically, Broadbent proposed a three stage sequence in the analysis of sensory data. First of all, sensory data is assumed to enter a short-term memory store (S-system) from the 'senses', which impose structural limitations (previously outlined) on the data perceived. The S-system is regarded as having no (psychological) limitations on capacity, receiving stimuli, from the 'world out-there' in parallel. A selective operation is then performed on in-coming stimuli which enter the S-system, particularly, for physical features such as intensity; pitch and spatial location of sounds. This

selection is not entirely random, according to Norman (1969). The probability of a particular class of events being selected is increased by certain properties of the events and by certain states within the individual (see also Lacey, 1967).

The second stage of analysis consists of a 'filter' which operates to minimise the amount of processing that must be performed by more complex, higher level processes. Irrelevant messages are allowed to decay in the S-system without undergoing further analysis in the P-system (the third part of the sequence). When the P-system is cleared, the filter then allows a new stimulus to enter the P-system. Attention to each stimulus in the P-system depends upon the quantity and quality of information conveyed by the stimulus.

While Broadbent originally conceived the filter as an'all or nothing process', he subsequently modified his theory in the light of additional research by Treisman.

Treisman's Filter-Attenuation Theory

Treisman, has over a number of years modified Broadbent's basic ideas, particularly in making more explicit the selection rules governing the action of the filter, and also the identification of particular signals when they occur. Information flows into the organism through a number of parallel channels. After reaching the receptors, they are analysed for crude physical properties such as loudness, pitch, position, colour brightness, size, and so on. The information resulting from this analysis is available to conscious perception and for reporting by the individual, regardless of what happens to the message beyond that point (Moray, 1969). Messages requiring further analysis, pass deeper into the nervous system and eventually reach the pattern recogniser which consists of a large number of 'dictionary units'.

The 'dictionary units' have two important properties- their thresholds differ, and their thresholds are variable. For perception to occur, the thresholds for that particular dictionary unit must be exceeded. The thresholds for biologically or emotionally important stimuli are permanently lowered.

Tresiman rejected the notion of the filter acting as an 'all or nothing system', and proposed that rejected messages are simply attentuated. In general, unattended messages or items do not activate the corresponding dictionary units, except when the threshold of one these units is exceptionally low.

In 1967, Treisman and Geffen asked whether or not the limited capacity in selective listening tasks, arose primarily in perception or in response organisation. Their results, they believed, overwhelmingly favoured a perceptual limit, with a filter selecting before the two messages were fully analysed. They believed that if the filter reduced the signal-to-noise ratio of unattended messages rather than blocking them completely out, this might account for the perception by the subject of words which were highly relevant to him, despite this attenuation. In a further study (Treisman and Riley, 1969), the results were interpreted as supporting the hypothesis that the chief effect of attention in tasks with competing speed messages, is to limit perception of the verbal context of secondary messages, rather than to restrict responses or memory. However, Deutsch and Deutsch (1967) and Lindsay (1967) took issue with Treisman and her colleagues, mainly on basic, theoretical grounds.

The Deutsch and Deutsch Theory

Deutsch and Deutsch (1963) argue that the selection of wanted from unwanted messages requires discriminatory mechanisms of as great a complexity as those in normal perception, and they believe that this presents difficulties for filter theory. They move the selection mechanism back toward the ultimate response. All signals arriving at sensory receptors pass through a stage of analysis performed by the early physiological processes. Stimuli then move to activate central structures (analagous to Treisman's dictionary units). The stimulus which excites its appropriate central structure the most, is selected for further analysis. Given the selected stimulus, the attention process now completes its analysis. Central structures have pre-set weightings of importance, based on prior experience, which Kahneman (1973) calls 'enduring dispositions'- and momentary intentions and needs.

According to Moray (1969), the Deutsch and Deutsch theory presupposes some pre-attentional pattern recognition mechanism. Pattern recognition precedes conscious perception and is not identical with it. The fact, however, that the observer is not aware of what signal was presented is not on this model, evidence that the signal has not been analysed. Moray goes on to suggest that their theory is a response selection model, but Deutsch does not agree, tending to regard the model as selecting incoming signals in the same sense in which the Treisman model does.

Other Models of Attention

Perception for Neisser (1967) is an act of construction and the role of attention is to select the percepts that will be constructed or synthesised. Pre-attentive mechanisms are assumed to perform preliminary analysis of incoming sensory data, as previously outlined. Neisser assumes that these 'silent systems' are responsible for grouping and localisation, and that they routinely watch for critical features of stimulation that may require the additional analysis of focal attention. Neisser objected to the image of a filter, yet Kahneman suggests that the selection of messages for synthesis is indistinguishable from the operation of a filter. Neisser's theory attributes the effects of significance and context to the role of expectations in the process of synthesis, and it assumes a crude global analysis of rejected messages. Selective attention consists of the allocation of a limited capacity to the processing of chosen stimuli and to the preparation of chosen responses.

Kahenman (1973) suggests that attention requires effort, and that there is in effect a limited capacity within the individual to perform cognitive tasks. A central notion of this theory is that the degree to which concurrent activities are mutually interfering can often be predicted by considering the effort which these activities require (Kahneman, 1975). He admits the possibility that the processing of concurrent stimuli may occur in parallel, where little or no effort is required.

In a series of experiments (Kahneman, 1975), Kahneman showed

that subjects who focus attention on one of two long lists of words can refrain from storing the contents of the other list in memory. But in a search task, subjects involunatarily store irrelevant items to which they paid attention to, in the search task. It was concluded that selective attention does not operate directly on the storing of information, but presumably affects some earlier stage in the processing of stimuli. He found, also that when attention is divided, the recognition of simulateneous words in long lists shows no trace of competition interference, even with a fast rate of presentation. The general level of performance was, however, found to be lower. Kahneman indicates that stimulus set, in Broadbent's terms, was more effective than response set in controlling selective attention.

Kahneman (1975) believes that these results present some difficulty for the Deutsch and Deutsch model, in the sense that their model views attention as a post-perceptual process, whereas, he believes his views are in line with those of Treisman and Geffen (1967) and Treisman and Riley (1969).

Modern Theories of Attention- Summary and Conclusions

Garner (1974) suggests that the wide range of phenomena existing within the attentive problem area has inhibited any real attempt at a general theory. Different theories emphasise different aspects of the problem, and yet there are broad similarities. The Neisser model; the Broadbent formulations and the amendments and modifcations by Treisman; and the Deutsch and Deutsch model are suggestive of the existence of some kind of pre-attentive mechanism, which operates crudely to classify incoming sensory data into classes of events which are considered pertinent for further analysis (Norman, 1969). Pertinence is considered to be a function of past events and experiences, present context and expectations, or as Lacey (1967) calls it 'situational stereotypy'. The distinction between the models tends to be in terms of the siting of the 'filter' or bottleneck in the analysis of incoming sensory data.

Filter theory and its modifications are relatively input-

orientated (including Kahneman and Neisser), and are properly classified as theories of perceptual attention. Other theorists more strongly emphasise the response aspects of the problem (Deutsch and Deutsch; including modifications by Norman, (1969); and Morton, (1969) who proposes a hypothetical logogen which accepts all kinds of information, whether directly stimulus, contextual or memorial information, and produces an available response when enough information or evidence for a particular word has occurred. None of the latter theorists, Garner suggests, treats the overt response as the locus of information, but all three assume considerable more information processing before the selective mechanisms, than do the input theorists. Kahneman believes that the effort involved in attentional processes should be considered, and Neisser wants to argue for perception as a construction of 'analysis by synthesis'.

Moray and Fitter (1973) insist that the properties of attention must no longer be regarded as fixed, but must be seen as largely task determined. Therefore, in a very real sense, attention should be regarded as the employment of dynamic strategies which are determined by a continually updated assessment of the informational demands of the source being monitored. Attention, thus, is seen to be intimately connected with the acquisition of skills; expectancy theory; decision theory and probability learning. Seen in this light, attention (including pre-attention) is not only a learned behaviour, but is also teachable.

Attention and Attentional Style

Teachers' attention within the classroom, is a scarce resource. Students make continual demands on the teacher's attention, and the teacher has to decide not only to whom attention shall be paid, but also in what manner he will allocate his time and attention between the wide range of tasks that teachers are called on to perform (for example, teaching; administration; discussing classroom domestic arrangements, and the like). Archer (1976) found that there were marked differences among teachers in their perceptions of the central and peripheral tasks of teaching. Differences were found between male and female teachers; and also in terms of the number of years of teaching experience.

The suggestion is that over time, and as the result of experience teachers develop ways of allocating 'attention' among competing demands within the classroom.

There is evidence to suggest that where tasks become automatic and attentional demands are minimal, that this frees additional cognitive capacity for higher level operations (Laberge, 1975; Willows; 1974). This finding is consonant with the habituation of the OR, and is in line with Fleishman's researches into task analysis, which showed that as subjects became familiar with tasks, or progressed through a particular task, differing cognitive skills were employed.

As teaching becomes 'automatic' in the sense that the material to be taught becomes known, then this should free teachers to concentrate on, and develop meaningful patterns of interaction with students. It becomes important to discover whether teachers adopt characteristic ways of allocating attention within the classroom (attentional style), and whether or not these are related to attentional theory as previously outlined.

Pachella (1975) indicated that the 'set' induced, seemed to structure whether or not an individual responded 'analytically' or 'synthetically' to presented material. These two processes, he believes, follow different rules, in the same kind of way, as those outlined by Broadbent (1970;1971) and Keren (1975;1976). Silverman (1970) on the basis of a series of factor-analytic studies has isolated two main factor styles of selective attention. Factor 1, which is similar to Pachella's 'synthetic' process, is described as the extent to which various segments in a stimulus configuration are perceived in a unified manner, or in terms of a dominant figural form. Whereas, Factor 2- the 'analytic' based on the embedded figures test- looks for either similarity in a particular attribute of each stimulus figure in an array, or the basis of a differentiated part of each stimulus figure in an array.

Vernon (1971), whilst agreeing that the 'analytic' and

'synthetic' styles can be clearly distinguished in the research, doubts the extent to which these allegedly preferred modes of processing sensory data are consistently adopted throughout an experiment or series of experiments. Davis (1971) found, for instance, that only about one third of a sample of 120 students consistently responded in a preferred style, and then certain responses were found not to be the result of attentional style, but more a function of the content and organisational properties of test items. Klausmeier et al., (1974) summarises a number of studies into attending behaviour and concept learning, utilising the Witkin 'analytic-global' distinction. Results showed that analytic students were marked superior in concept learning. This superiority held across a number of different situations, and across tasks (eg. laboratory v classroom ; artificial concept v geometrical concepts).

Without becoming involved in the laboratory-field research controversy, it goes without saying that attentional concepts and theories learned and isolated in laboratory situations need to be tried out in the real world, where action is more rapid, and control over experimental variables extremely difficult to obtain.

Titchener placed attention at the centre of the psychological universe. Perhaps, it is time for it to resume its position, not, however, as the absolute monarch of the central nervous system, but as Moray and Fitter (1973) suggest, as the duly elected leader of the cognitive processes, which like all good leaders constantly adjusts its aims to carry out the aspirations of the people, changing its policies according to the general will.

Summary

The concern of this chapter has been to outline some of the basic assumptions which seem to be implicit in perception and attention. The history of attention suggests that the problems experienced at the turn of the century, are essentially those of today. The major concern of this chapter, has properly, been on the way in which the human organism copes with incoming sensory

data. Several models of attention were discussed, and from a review of the literature, it appears that two basic processes exist by which the incoming data is analysed. It appeares that these two processes follow different rules. A link between these two processes and two attentional styles has been proposed, particularly, the analytic and synthetic modes as suggested by Pachella and Silverman. It may be that these attentional styles and levels of processing follow similar rules. This suggestion may however, be somewhat simplistic, for evidence also exists, which indicates that attentional style (and processing style) may be a function of a number of variables within the individual; within the task, and context, and their inter-relationships.

The search for objective measures of attention continue, and some hope appears to exist in the utilisation of physiological measures. It has been suggested that learning may intervene at the pre-attentional level and functions to have some control over orienting mechanisms. It has been suggested that if in fact learning does occur and intervenes at these fundamental levels, then there are implications for teaching and learning theory.

CHAPTER 3

TEACHER ATTENTIONAL BEHAVIOUR

Introduction

This exploratory study is predicated on the assumption that it matters how, and to what, teachers allocate their attention in classroom interaction with their students (Barker Lunn, 1970;1971). Research into the attentional behaviour of teachers in terms of the attentional processes and styles outlined in the previous chapter, is practically non-existent. Chapter Three surveys some of the research into Teacher Attentional Behaviour (TAB). This research has, typically, been in terms of teachers' perceptions of salient features of classroom stimuli (eg perceptions of student characteristics; classroom environments and climates) or of teachers' expectations of the performance of students within their classrooms. Much of the research into TAB has tended often to be incidental and subsidiary to other research questions posed-for instance, the major thrust of the research may be into the effects of streaming on pupils; or research into student under-achievement.

Good and Brophy (1973) believe that the pace of classroom interaction is so rapid, that teachers appear to be primarily 'reactive' rather than 'proactive' in their interpersonal interactions with students. That is, individual differences in students make differential impressions on the teachers and condition them to respond differentially (cf. Barham and Boersma, 1975). Teachers, according to this view, are continually reacting to classroom stimuli. Gagné (1973) suggests that any stimulus situation is a complex made up of a number of components that involve elements external and internal to the individual. His analysis is primarily directed towards the learner within the classroom situation. Our concern, however, is not so much with the learner, but more with Gagné's general approach to the analysis of stimulus situations, into a number of inter-related components.

Components of Stimulus Situations

The stimulus situation is composed, first of all, of stimuli that enter directly into the performance (integral stimuli), and these are primarily task and context stimuli. Secondly, Gagné believes that there are stimuli that activate previously acquired

processes or states within the individual (activating stimuli). Activating stimuli provide-

a..control of attention;
b..activate recall;
c..activate a performance set; and
d..arouse a motivational state within the individual.

The third category of stimuli, Gagné suggests, derive more or less from memory. These are stimuli which arise internally from recalled capabilities involving the recall of information; relevant intellectual, and performance skills; and internally organised cognitive strategies. Cognitive strategies are akin to 'thinking strategies' (Bruner, 1961) and 'coding strategies' (Mandler, 1966). These cognitive categories tend to be concerned with the ways in which the individual consistently organises sensory data from the environment.

There are, then, three sources of stimuli in any stimulus situation. There are stimuli which derive from task and contextual aspects of the situation. These, in a very real sense activate processes within the individual, including attentional and orientation behaviour. How these are manifested in behaviour is a function of internally recalled (memory) capabilities. Teacher-pupil interactions can then be analysed in terms of task and contextual components; activating and recalling components.

Teacher Attention and Student Characteristics

Hoehn (1954) showed that whilst the quantity of contact with students did not vary according to socio-economic status (SES) of the student, there was evidence to suggest that the quality of contacts made, favoured higher status students. Hoehn, also, pointed out, that in his opinion, there was a strong indication that non-status factors were much more important than status factors in determining the quality of teacher behaviour any given student received in the classroom.

Much of the research into the socio-economic determiners of teacher perception of students is equivocal. Friedman and Friedman (1973) found that teachers gave more verbal and non-verbal reinforcing behaviour to students from middle class homes

than students from lower class homes. Brown (1969) showed that middle class schoolrooms tended to be more facilitative and positive than lower class classroom. Yee (1968) suggested that SES was by far the most important variable in determining teacher attitude to students; these attitudes were in the main, reciprocated by their students.

Goodwin and Sanders (1969) asked teachers to rank seven (pre-) selected variables in importance, for predicting student success at school. SES was thought to be most important for first grade students, and ranked second, behind grade-point-average, for sixth grade students. SES was ranked higher than IQ for both first and sixth grade students. These results, however, could be an artefact of the instruments and methods used. Taylor (1976) employing a relatively unstructured approach (Kelley Reptest) found that constructs relating to SES (homebackground) accounted for only about 6% of all constructs derived in the research. Teachers were asked to identify the attributes which they used to explain and predict the activities and performance of their students. Further analysis of the data showed that over 40% of all constructs were orientated towards academic achievement. Personality characteristics (19.7%) ; and behaviour and relationship constructs (15.47%) were ranked second and third respectively. Home background constructs were ranked fourth (8.52% of all (446) constructs analysed).

Taylor (1976) concluded that whilst home background had salience for teachers, it was not based on views of parental SES, but more on the degree of ostensible parental support for the child at school (see also Ashcroft, 1972). There is no doubt that the research evidence supports the notion that SES affects the life chances of pupils at school (Douglas, 1964; Goldberg et al., 1966; Rist, 1970; Smith, 1965), but Murphy (1974) queries the extent to which teachers, and people in general, are able to classify individual accurately in social class terms. Murphy (1974) found that the list of factors which teachers considered to have a depressing effect upon academic achievement was endless, but what was significant, however, was that such factors were not described in SES terms.

It may well be that academic performance and classroom behaviour (especially where it is responsive and cooperative) interact to influence teacher expectations. These pupil characteristics may be coincidentally associated with SES. Thus the relationship between SES and teacher attitude (and behaviour) may not be the cause-effect relationship many writers have assumed it to be.

Stevenson et al., (1976) investigated teachers' perceptions of children's ability at the kindergarten level and at the grade-three. They argued that teachers' perceptions accurately reflected the children's abilities, and therefore, it could be asserted that the children's futures were not being moulded by their teachers, for children's success at school was more closely related to cognitive abilities, than to ratings of either classroom skills or of personal or social qualities (see also, Willis, 1972). Silva and Fergusson (1976) presented an analysis of the association between IQ and SES. They found that the intervening variables of maternal general mental ability; mother's training in child development; authoritarianism and the child's experiences accounted for about 95% of the correlation between SES and IQ.

The comments made by Brophy and Good (1974) which suggest very strongly that SES is a predictor of both teachers' perceptions of their children and their treatment of them in classrooms is, then, open to some doubt. There is some evidence to suggest that teachers do not, in fact, respond to students in social class terms. SES is in itself a summarising variable (Swift, 1968).

Ashcroft (1972) indicates that social class differences are manifested not only through divergent belief systems, divergent role expectations and varied levels of aspiration, but also through modes of communication which in turn affect intellectual ability. In other words, whilst teachers , as Murphy suggests do not differentiate students in SES terms, the factors, teachers considered to have a depressing effect on academic performance were in themselves, indices of differential SES. Ashcroft (1972) showed that the degree of compatibility or otherwise, of teacher

and parental belief s was associated with the kinds of feeback offered pupils, although the teachers were not aware of the beliefs held by the parents of the pupils receiving the feed-back.

There is some evidence to suggest that teachers respond to students in terms of student ethnic differences. Rubovits and Maehr (1973) for example, found that 'white teachers' tended to favour white students in micro-teaching situations. The 'teachers' gave significantly less attention to black students, even though black students comprised half of the group under tuition. The 'teachers' requested fewer statements from them; ignored more of the statements made by them; and were generally far less encouraging to the black students. Coates (1972) in a similar experiment discovered that male teachers tended to be more critical of black students, despite the fact that both black and white students handed in similar answers. Feedback to the black students tended to be more negative than the feedback to white students.

Byers and Byers (1972) thought that the reasons why a white child, in their study, obtained more frequent and positive feedback from a white teacher, despite fewer attempts to make contact and obtain the teacher's attention, was due to the black girl's relative unfamiliarity with the cues inherent in the white dominated situation. There was no suggestion of active discrimination against the black girl, in this study. It appeared that the little black girl was unable to identify the appropriate cues that would get her the attention she wanted. Behavioural manifestations then, created in the matrices of differing socio-economic and ethnic levels, provide the cues upon which teachers (and pupils) act, (Ashcroft, 1972). Garcia and his associates (1969) suggest that for learning to be effective, the cue must be appropriate for the consequences that ensue. In other words, pairing of cue and response is not good enough; mere association of cue and response will not of themselves ensure learning. Preparedness to respond (Seligman, 1970) has to be associated with the appropriate cues.

Many of the results of studies into teacher perception of students on the basis of ethnic grouping tends to be confounded by

SES variables (Rist, 1970), and the particular role of race may be difficult to dis-entangle (Harker, 1973; Vernon, 1969). Colour, however, provides a visible index of difference, and this may bring about overt reactions in the classroom (Kleinfeld, 1972; Yee, 1968).

Brophy and Good (1974) suggest that boys have greater salience in the normal classroom. They appear to be more active within the classroom, and more interactive with teachers than girls. Boys it seems, also tend to get into more trouble than girls, with teachers of both sexes. Ashcroft (1972) found similar results. There was a significant relationship between sex status and teacher sanctioning behaviour. Boys received a significantly higher frequency of negative sanctions and teacher contacts, and a significantly lower frequency of positive sanctions than did girls. Spaulding (1963) broke down the data from 21 classrooms into seven categories of behaviour which attracted disapproval from teachers. The most frequent cause of disapproval was 'lack of attention', for both boys and girls (about 40% of both boys' and girls' totals of disapproved behaviours). Lack of knowledge or skill was the next category (40% for girls; 26% for boys). The third category was 'violation of school rules' and again, there was a significant difference between boys and girls (17% boys; 9% girls). Meyer and Thompson (1963) sought pupils' perceptions of how boys and girls were treated by teachers. Both boys and girls believed that teachers 'criticised' boys more frequently than girls, but there were no differences seen in the amount of praise given.

It is quite evident that teachers' perceptions of student salience has an effect on the likelihood or otherwise of interaction of one kind or another, with the student. Academic achievement (Hoehn, 1954); personality (Jackson et al., 1969); physical attractiveness (Dion et al., 1972) and location within the classroom (Adams and Biddle, 1970) have all been cited as being determiners of teacher perception within the classroom (Brophy and Good, 1974).

The student as a stimulus within the classroom evokes responsive behaviour by the teacher. The nature of the stimulus must be seen in the task-context situation, and to a large extent, teacher attention of pupil behaviour and pupil characteristics must be seen against this background. Attention to pupils appears to be a function of the appropriateness or otherwise of student behaviour within any given situation.

Teacher Attention and Teacher Characteristics

Taylor (1976) believes that the sex of the teacher may be a more important factor in determining teacher perceptions of students, than some of the more traditional measures previously discussed. Male teachers, Taylor discovered, tended to be more concerned with academic achievement than female teachers. Female teachers, on the other hand, were more sensitive than their male counterparts to teacher relationships with individual pupils, yet less sensitive to peer group relationships. There was more concern by female teachers with classroom discipline, and they were more prepared to stereotype students and evaluate them on less information that their male counterparts. This data is consistent with other evidence (eg. Hutt, 1972) that women tend to be more concerned with inculcating social mores and codes of conduct than men.

Erwin et al. (1967) have suggested that complex cognitive modes may represent or derive from a form of perceptual vigilance. They found that negative person objects were typically perceived more complexly than positive person objects. The inherent threat appears to attract greater attention to the object- a finding perhaps, which links female dependency needs with the greater female emphasis on discipline within classrooms.

In the Taylor study above, men offered more constructs than females, and suggests that thereby males are cognitively more complex than females. He cites evidence from Erwin et al. (1967) to support his argument. In contrast, Shouksmith (1970) argues that females are cognitively more complex than males. Hutt (1972) and Little (1968) indicate that on the whole boys tend to be more cognitively complex with regard to objects and things, and have better differentiated concepts with regard to impersonal

matters, whereas girls being more person-orientated differentiate more subtly along social and emotional dimensions. Silverman (1970) suggests a male-female dimension along which individuals can be placed. He believes that males and females tend to perceive the world in different ways, and this, if correct, has obvious implications for male and female teacher attention within classroom contexts. Seaman and Koenig (1974) insist that cognitive-complexity measures are multi-dimensional in nature, and that a large proportion of the factorial content of these measures may be accounted for by the affective value of person stimuli, a recognition of the affective content in any measure of cognitive complexity.

Good and Brophy (1974) believe that in general, differences between male and female teachers seem to be less frequent and less intense than between male and female students. This, they argue, is on account of the possibility that the teaching role tends to submerge individual differences, so that teachers are more similar to one another when working in the classroom, than when they are outside the classroom. This argument does not account for the wide variety of behaviours encompassed by the notion of teaching role, nor does it account for the growing evidence that there may well be real differences between male and female teachers in cognitive style (attentional style) , and that these differences could well have real implications for students within the respective classrooms (Witkin, 1969). Good and Brophy (1974) do not proffer any research evidence which indicates whether or not male teachers are more reactive (or proactive) than female teachers.

Seligman (1970) has challenged the general laws of learning by arguing for the existence of a variety of classes of behaviour, and for the attendant 'fact' that learning principles fail to apply uniformly to all these classes of behaviour. He suggests that the laws of learning may vary with the preparedness of the (human) organism. He proposes a 'dimension' of preparedness which any individual brings into any learning situation. He believes that physiological and cognitive mechanisms may covary with preparedness. This may explain why some teachers who have had a difficult time with one or more pupils, find it difficult to accept that the

pupil(s) concerned have turned over a 'new leaf'. The preparedness dimension suggests an orientation to stimuli and a 'willingness' or otherwise to incorporate the stimuli into existing cognitive structures. Seligman also believes that certain stimuli are readily conditioned as a function of the organism's species-specific characteristics. Other stimuli, however, are extremely difficult to condition to responses, because they run counter to these species-specific characteristics.

Gagné, in his analysis of the stimulus situation does not take into account the possibility of species-specific responses to stimuli, and it could well be that in the teaching-learning situation, that there are certain 'species-specific' behaviours. There is evidence to suggest that the preparation teacher-trainees receive in training colleges, has minimal long term effects, for instance on the attitudes of the student-teachers to pupils (Brim, 1966; Dutton, 1962; Loree, 1971; Yee, 1969) and that the real development of the teaching role, comes not from teacher training in teachers' colleges, but in the day to day contact with pupils. The attitudes brought into teaching by the trainee-teachers, prior to entry into training are probably crucial in determining the nature of the teacher's attitude to pupils in his care. It could well be that cognitive skills (particularly those differentiating males from females) are sex-specific and not amenable to learning (conditioning), and this could have implications for notions of the conditioning of orienting responses as suggested by Barham and Boersma (1975). This, at present, is speculative, but could well be a fruitful area of future research.

Teacher Attention and Teacher Expectations

A great deal of research has been conducted on 'teacher expectations' and the manner in which they have tended to structure teacher perception. A distinction, however, needs to be made between 'induced' expectations in experimental and quasi-experimental situations, and 'naturalistic' studies of teacher expectation effects (Good and Brophy, 1974).

Induced expectations occurred when teachers were given information, much of it false, about the measured capabilities of students

in their classes. Usually, IQ or achievement tests were given prior to the set being induced in the teacher, and then at the end of the experiment, maybe a semester or a year later, the same or similar IQ or achievement test was again given to the students, and differences between the two sets of scores (end products), were attributed to the fulfillment of the self-fulfilling prophecy. In a large number of these experiments, including "Pygmalion in the Classroom" (Rosenthal and Jacobson, 1968) only the end-products were measured, and the processes by which these end-products obtained, were ignored (eg. Goldsmith and Fry, 1970; Fleming and Anttonen, 1971).

However, a number of studies were conducted in which attempts were made to measure process variables. Generally speaking, where product results showed expectancy effects (Davis and Levine, 1970; Rubovits and Maehr, 1971), there were also significant process effects. Teachers tended to interact more with 'gifted' students, requesting more information from them, and praising them more frequently. Rothbart et al., (1971) reported that teachers were more 'attentive' towards the 'brighter' students. There were, however, no group differences in the amount of teacher praise or criticism. Indices of attention tend to vary with the researchers, some utilise verbal behaviour (questions asked; pupils named, and so on) whilst others have employed non-verbal indices of attention such as smiling; nodding; posture and eye-contact (Chaikin et al., 1972). In all cases, the higher the induced expectation, the greater the frequency of 'attentive' behaviours of a positive nature. As long as the learner or student fulfills the high expectations, he is likely to be rewarded more frequently and more intensely than a classmate who does equally well, when this is not expected of him. However, a high expectation student who performs below expectation may suffer more negative consequences than a classmate of whom less was expected (Lanzetta and Hannah, 1969). Hughes (1973) showed that the group who received consistent teacher support outgained those in a control group who did not receive such support and feedback.

There have been relatively few 'naturalistic' studies of

teacher expectations, where the process was investigated. Rowe (1972) found that teachers were prepared to wait longer for answers to questions from higher ability students than from lower ability students. Low ability students in the Rowe study, received more praise and criticism than high high ability students. There were differences, however, in the quality of praise offered. Praise tended to be appropriate and highly specific for high ability students, whereas, for low ability students, praise tended to be generalised and inappropriate. Similar results have been obtained by Brophy and Good (1970) and Jeter and Davis (1973).

Where product differences emerged in the research on the 'expectancy syndrome', it appeared that similar patterns of interaction between teachers and students occurred, regardless of whether or not expectations were 'induced' or arose'naturally'. High expectancy students tended to receive more praise and help and encouragement than low expectancy students. Many studies, however, failed to produce product differences for a number of reasons, including the non-preparedness of teachers to accept the 'sets' provided, either because they 'knew' about the experiment, or refused to give the false data serious consideration.

Apparently 'good' and 'experienced' teachers are less likely to be swayed by expectancy effects than 'poor' and 'inexperienced' teachers (Good and Brophy, 1974). They also hypothesise that subject and/or task orientated teachers will be less likely to be caught up in the expectancy syndrome, than teachers who emphasise inter-personal relationships within the classroom. Presumably, then these differences could be a function of the sex of the teacher. Too few, large scale studies have been conducted in which the individual differences among teachers have been used as variables affecting the susceptibility of teachers to expectancy effects.

Much of the research discussed in this chapter has been concerned with stimulus-set material (Broadbent, 1970;1971) or in Gagné's terms, stimuli which activate present states of the individual, including the control of attention. Broadbent's 'response set' material, is similar to Gagné's stimuli which arise internally within the teacher (including attitudes and cognitive strategies). Expectancies which arise naturally within the class-

room could well be a function of deeper level attentional processing, characteristic of response set material.

The construct 'attention' has to be inferred, of necessity, on the basis of behaviour, and/or physiological change. In classroom interaction studies 'attention' is inferred typically in terms of teacher talk, particularly questioning, praising, and the naming of pupils (eg. Hall et al., 1968); non-verbal behaviour, including nodding and smiling (eg. Becker, et al., 1967); and the amount of time a teacher allocates to one pupil rather than to others, though this may have 'ripple' effects (see for example, Okovita and Backer, 1975). To infer 'attention' from these behavioural indices, is not to equate 'attention' with them. The mere presence, for example of nodding or smiling behaviour, does not ipso facto mean that attention is being paid, but rather should be regarded as an indicant of that possibility. There is ample evidence to demonstrate the efficacy of attentional behaviours in reinforcing behaviour, particularly, where teachers have 'consciously' used behaviour modification techniques (eg. Broden, et al., 1970;Kazdin, 1973; Thomas et al., 1968). Dunkin and Biddle (1974) review a number of these studies, and on balance feel that 'praise' is probably the 'best' form of reinforcement. They express a number of reservations, however, not only about behaviour modification techniques themselves, but also the way in which some of these have been reported in the literature.

Dunkin and Biddle (1974) in fact, suggest a model of classroom teaching which structures the approach they have taken in reviewing research into teaching. Following Mitzel (1960) they distinguish between 'presage', 'context', 'process' and 'product' variables which appear as aspects of the teaching situation. Presage variables include three sub-sets of variables- teacher formative experiences (sex, age, social class, among others); teacher training experiences; which include the college or university attended, and length of training; teacher properties, including measurable personality characteristics, attitudes, motives and cognitive strategies. Teacher properties are those internal to the teacher, and are therefore not amenable to direct observation.

Context variables concern the conditions to which the teacher must adjust- the school's physical, psychological, and administrative environments. Process variables focus upon the actual activities of classroom teaching. Product variables look towards the results or outcomes of the teaching process- the measurable changes which come about in pupils, as a result of their involvement in classroom activities with their teachers and fellow pupils.

This research study is more interested in Dunkin and Biddle's presage and process variables, than with the context and product variables. The following chapter looks at the instruments; the methodologies and procedures employed in the research, and their rationale, in attempting to measure teacher attentional behaviour.

CHAPTER 4

RESEARCH DESIGN, RATIONALE AND METHODOLOGY

Review and Preview

Chapter Two examined and reviewed theoretical aspects of attentional processes and processing. It was suggested that learning may intervene at all levels in the attentional process, including the initial classifying and categorisation of stimuli, and the filtering through of stimuli for further, deeper level processing. Incoming sensory data, it appeared, tended to be analysed at two different levels by seemingly differing processes. A link between these levels of processing and attentional styles was advanced.

In Chapter Three, there was a shift in emphasis away from laboratory based research into attention, to classroom based research. It was shown that teachers' perceptions of students was a function of a number of variables, including student; context; and teacher characteristics. Teachers' perceptions of their students have significant consequences in terms of the nature and frequency of interaction with students. Such exchanges appeared to have observable effects on the academic progress of students and subsequently affect their life chances. In the research surveyed, it was noted that difficulties were experienced in obtaining indices of teacher attention, and that those indices typically employed in classroom situations, were based on frequency measures of smiling; nodding; questions asked; praise given; time spent with students, including time waiting for responses to questions.

This chapter extends the theoretical bases established in the previous two chapters, into an exploration of Teacher Attentional Behaviour (TAB) through the medium of a variety of cognitive tasks, against the background of teacher attitudinal and biographical information. The first part of this chapter outlines the research design and rationale, and part two argues for the use of the instruments and methodology employed. The following chapter examines the nature of the sample utilised, and includes a discussion of the statistical techniques utilised.

Research Design and Rationale

The tension between laboratory and naturalistic or field research (McGuire, 1967) has already been commented upon, as have fundamental differences between what might be called the 'Lockean' and 'Leibnitzian' views of science. Science, provides a lense through which reality may be partially viewed, and differing conceptions of science tend to provide differing views of the world 'out there'. Phillips (1971) believes that every description of research methods, whether of a very specific technique, or of a very general orientation to the scientific method, carries with it, a theoretical approach to science and society (see also Nuthall and Snook, 1973)

There are obvious differences between laboratory and classroom research, perhaps epitomised by the nature of the research presented in the previous two chapters. Kerlinger (1964) puts into perspective the strengths and weaknesses of the differing types of research, and Brandt (1972) suggests that arguments presented for and against types of research endeavour should not be regarded as favouring any one to the exclusion of alternatives. Furthermore, sharp differences drawn between types of research, may not in fact be quite so distinct (see for instance, Kavanau, 1969; Kelley, 1969; and Menzel, 1969). Orne (1962) among others (eg. Rosenthal,1967; Schultz, 1969) has pointed out and discussed the nature of experimenter effects in laboratory research. Probably, the ideal would be to utilise a variety of approaches to the same data, perhaps on the lines suggested by Campbell and Fiske (1959).

The researcher's approach to science and his commitment to a particular methodological stance, inevitably structures his perception of the problem and hence its possible solution. There are, then, explicit or implicit 'hypotheses' which guide the researcher's thinking, and the direction of his research. Meehan (1968) believes that it is perfectly sound to argue that description uninformed by theory is impossible, or that empirical data not organised by some explanatory structure, are meaningless. This 'need' to have some structure as an organiser of perception, is required, for instance, in the classroom (Good and Brophy,1973; Ober et al., 1971). Smith (1967), a staunch advocate of 'partici-

pant observational methodologies' indicates that 'foreshadowed problems' selectively guide the thoughts and perceptions of observers in the field.

This 'ex post facto' study of attentional behaviour is essentially exploratory in nature, guided not by highly specific hypotheses (the dangers of this approach are acknowledged, Kerlinger 1964) but by broad based general notions that there exist links between TAB and teacher characteristics and classroom behaviour. The concern of the research is more toward the 'discovery' of regularities in teacher behaviour, and must be seen therefore, as essentially an hypothesis generation study, rather than one designed to test hypotheses which have already been generated. That this is a legitimate approach has been argued by a number of authorities (Smith and Geoffrey, 1968; McCall and Smmons, 1969; and for example, the work of Howard Becker and Erving Goffman).

One general notion which guided this research was that biographical features of a teacher may have a role to play in the way the teacher directs his attention in the classroom. A second notion was that maybe, teachers attention is a function of his attitudes to students, or perhaps of specific expectancies (Silberman, 1969). A further notion implicit in the research was that teacher behaviour including TAB displays consistency across a number of situations. TAB may, for instance, be situationally specific, rather than group (teacher) specific, or species (sex) specific. Finally, it was assumed that attentional behaviour as measured by paper and pencil tests should be manifested in actual teaching behaviour.

This necessitated the obtaining or devising of suitable instruments which would allow the collection of the required data. It was recognised that the instruments employed function further to structure, and maybe refine the original guiding notion and ideas.

Instrumentation and Data Collection

Information was gathered from teachers through a devised Teacher Questionnaire which sought in the main biographical data from teachers. The Minnesota Teacher Attitude Inventory was used to ascertain teacher-student attitudes. A number of tests from the Kit of Reference Tests for Cognitive Factors was employed to obtain paper and pencil measures of teacher attentional behaviour, and teachers were asked to view and respond to a number of video-tape extracts.

The above measures were administered to teachers in two parts over a period of approximately six months; this constituted Phase One of the research. Phase Two consisted of filming a number of teachers in classrooms in their respective schools. Phase Two was entered into at the completion of Phase One.

In other words, measures of TAB were obtained using instruments similar to those utilised by Silverman (1970) and Pachella (1975). Similar procedures to those used in the research surveyed in Chapter Three were utilised to obtain 'in situ' measures of TAB. Teacher perception and responses to video-tape extracts probably occupies the middle position between the more or less rigorous tests of attentional behaviour, on the one hand, and on the other hand, the attempts to gauge TAB through the use of 'in situ' observational procedures. This latter procedure - seeking teacher responses to video-tape extracts- is congruent with the symbolic interactionists' position of obtaining data about the empirical world from the actors concerned. G.H. Mead identified two forms or levels of social interaction- 'the conversation of gestures' and 'the use of significant symbols'. Blumer (1969) refers to them as 'non-symbolic interaction' and 'symbolic interaction' respectively. There is a parallel between the ideas of Mead, and current notions of attention. Mead suggests that non-symbolic interaction takes place when the individual responds directly to the action of another without interpreting that action, whereas, symbolic interaction involves interpretation of the action. Non-symbolic interaction is seen as occurring particularly in reflex responses. These notions are suggestive of the differing levels of processing previously discussed.

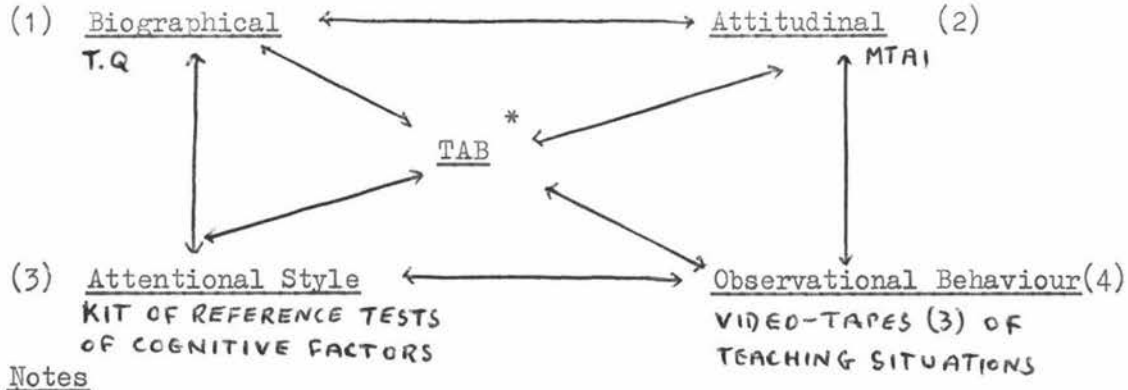
Symbolic Interactionism is based on three premises. Firstly, human beings act toward things on the basis of the meanings that the things or objects in the world 'out-there' have for them. Secondly, such meanings derive or arise out of social interaction, and thirdly, that the meanings used are a function of the individual's interpretive processes. In a very real sense, the individual is seen as the constructor of his own reality. He is active in the Leibnitzian sense.

The symbolic interactionist's view of the individual appears to be markedly different from that offered by Good and Brophy (1974), who suggest that teachers are mainly 'reactive' and not 'proactive' within the classroom. There is, however, a real need to understand the phenomenal world of the teacher as he engages in the teaching process, and to some extent the seeking of responses to the video-tapes of teaching-like situations, attempted to extract from teachers, the meanings those tapes had for him.

Primarily, four different sets of information thought to be relevant to Teacher Attentional Behaviour was collected, employing a variety of research procedures, as the figure below indicates-

Fig. 4-1

Schematic Representation of Data Collection Procedures employed in Teacher Attentional Behaviour Research +



Notes

+ Phase One only

(1)(2) are essentially 'self-report' measures

(3) these are psychometric tests

(4) relatively unstructured 'projective' instruments

* not all interactions possible are included, nor does interaction necessarily imply causality

The variety of methods and approaches used to investigate the construct 'attention' (including the filming of teachers 'in-situ') is consonant with Smith's (1975) notion of'triangulation'; 'convergent validation' (Scott, 1968) and Campbell and Fiske's (1959) notion of the 'multi-trait-multimethod' model of analysis. The following section of the chapter discusses the nature of the instruments employed (copies of all instruments are contained in Appendix 1).

Teacher Questionnaire

The Teacher Questionnaire (TQ) booklet included a brief statement setting out the aims of the research, safeguards, and a guarantee of confidentiality to all teachers. All questions in the TQ were pre-coded to facilitate computer processing, apart from three open-ended questions, which were concerned with teacher qualifications; factors thought to have been important in the teacher's development; and 'expectancy' measures.

As most of the information sought was personal, factual material, it was expected that such material would be highly reliable (Kerlinger, 1964; Fox, 1969). No checks were made on the reliability of this data. In an important sense, the issue of the reliability of the three open-ended questions is not relevant, in that the concern was to obtain teacher perception of the situation at the time of the administration of the TQ.

Two questions posed some difficulty for the teachers. Question 10- "Would you please list any experiences which you believe have markedly affected you in your personal development and in your development as a teacher. Examples could be travel overseas, war service, work experiences prior to entry to teaching etc."
Difficulty, in this instance, was interpreted as a 'nil' response to the question. Approximately 25% of the teachers responding to the TQ, made no response to this question. Other interpretations of 'nil' responses apart from the notion of 'difficulty' could be made, particularly, in terms of Witkin's notions of differentiation.

The other'question' to cause some concern was the Silberman (1969) 'expectancy measures' (pages 7 and 8 of the TQ). After

discussion with Principals, and Departmental Officers, it was agreed to leave the 'question' in the TQ, on the understanding that if teachers objected to naming pupils, they could either use initials, or miss the question out completely. In the event, a number of teachers were not able to complete the expectancy measures, because they were 'specialist' teachers and had no classes of their own.

The two parts of the 'question' were planned to investigate the possibility that children appearing in each of the four categories (attachment; indifference; concern; and rejection) within a particular classroom, had reputations which spread throughout the school. This would, perhaps, have given an idea of whether or not the categorisation of pupils was a function of the relationship between that teacher and the pupil, or whether perceptions about children were generalised throughout the school. If the latter were the case, then there were implications for both the school and pupil. However, this promising line of research had to be abandoned for, in the main two reasons. There was (1) a fear of labelling the child concerned, and (2) a marked reluctance among some teachers to accept that they 'liked' some children more than others. In preparing the TQ, very careful attention was given to the wording of this 'question', because of its 'delicate' nature, and resistance to the 'question' was not unexpected. It was a measure of confidence in the researcher that teachers were able to express their feelings about the 'question' openly, and that the decision not to complete the 'question' was arrived at after open and frank discussion. It had also been hoped that teachers involved in Phase Two of the research might show differential behaviours towards the children named in each of the four categories, but this aspect of the study was not proceeded with.

Question 9 was inserted into the TQ, after discussion with Principals, who felt that teachers with a wider teaching experience (ie. those who have had the benefit of teaching at more than one level in the teaching service) were 'better' classroom practitioners, and thereby manifested teaching behaviours different from those who had not had this experience.

Question 13 presents a 9 item scale and was an attempt to obtain some indication of the professional commitment of teachers. It had been hoped to develop a Guttman type scale, in the event, the number of ticks represents the 'professionalism' score. Again as most of the information is factual and personal, it was expected that the 'scale' should be reasonably reliable. Membership of professional groups; regular attendance at meetings; subscription to professional journals and the like, are all indices of 'professionalism' and hence the 'professionalism scale' has face validity. This is not arguing, however, that teaching has yet become a profession (see Lortie, 1975, for comments on the USA situation).

The completed questionnaire was perused by principals; by Officers of the Education Department, and by a representative of the New Zealand Educational Institute. A group of teachers not involved in the research tried out the questionnaire without apparent difficulty, prior to the administration of the TQ to the teachers participating in the research.

The Minnesota Teacher Attitude Inventory

The relationship between attitudes and behaviour can at times be quite tenuous. Attitudes appear to have three components- cognitive; affective; and a tendency-to-act (Reich and Adcock, 1976) Though there are positive, and probably low, correlations between the three components, it is difficult, for a number of reasons, to predict intentional behaviour from knowledge of the individual's values and attitudes. Cook and Selltiz (1964) indicate that other motives or personal dispositions which clash with behavioural expression, and possibly situational factors, such as norms of the appropriateness of the behaviour and the expectations of others,may be crucial in determining whether or not values and attitudes are manifested in behaviour. Snyder and Tanke (1976) indicate that both behaviour-attitude and attitude-behaviour congruence will be greater for persons who regard their overt behaviours as accurate reflections for corresponding dispositions, and in situations which stress the relevance of attitudes, dispositions and other personal characteristics as guides to action (see also Norman, 1975). It can

be argued that teaching behaviours ought to reflect dispositions towards children, and any attitude inventory which measures attitudes to students by teachers should be reflected in behaviour in the classroom. The Minnesota Teacher Attitude Inventory was chosen because of its non-threatening stance; its face validity, and its relevance to teaching and the research study.

Cooke, Leeds and Callis (1951) developed the Minnesota Teacher Attitude Inventory (MTAI) as a result of a decade of research which they believe indicated that not only could teacher attitudes towards children and schoolwork be measured with high reliability, but also, that these measured attitudes were significantly correlated with teacher-pupil relationships found in the teachers' classrooms. The instrument received on the whole, favourable comments from reviewers (Arnold, 1953; Cronbach, 1953), who praised in particular, the painstaking development of the MTAI. However, doubts were expressed about the validity of the MTAI for its recommended purposes- the selection of students for teacher preparation, and the selection of teachers for teaching positions. Cronbach suggested that the use of the instrument be limited to research purposes, until its recommended predictive validities be verified.

After an extensive review of the literature on the MTAI to that date, Getzels and Jackson (1963) expressed the conviction that the crucial importance of understanding teacher attitudes would justify any efforts to make the MTAI more meaningful. Yee (1967) whilst recording his reservations about the predictive validity of the MTAI, concluded that the MTAI is useful, especially for research purposes as an 'indicant' of teacher attitudes to pupils. Nall (1971) found that scores on the MTAI correlated with measures of classroom climate. Research has also indicated that the MTAI scores correlate with leadership style (Summers et al.,1969); with ratings of teacher effectiveness with affectively orientated pupils (Piana and Gage, 1955; Brody, 1970). Initially, it appears that MTAI scores tend to be somewhat unstable early in a teacher's career (Loree, 1971; Yee, 1967; 1968;) following exposure to courses in education (Brim, 1966); Yee (1969) and others (Dutton, 1962; Muuss, 1963) report that teacher-trainee scores on the MTAI tend towards the

the scores of their supervising teachers. Contact with the realities of classroom life tends to depress MTAI scores, suggesting a shift over time to more 'custodial' attitudes towards children (see also Archer, 1976 and Hoy, 1967).

It has been suggested that the MTAI is susceptible to faking (Rabinowitz, 1954; Scott and Brinkley, 1960; Sheldon, 1957; Sorensen, 1956) . Callis (1954) maintained, however, that the MTAI was only slightly susceptible to faking. In the event, it was found that the fakeability of the MTAI was a function of the set induced in teachers by researchers (Rossi et al., 1966). Factor-analytic studies of the MTAI (Horn and Morrison, 1965; Yee and Fruchter, 1971) indicate that whilst the MTAI factors fall into a 'positive manifold', several largely independent response consistencies are represented by the total MTAI score. They believe that the MTAI's construct validity is uncertain, when the total score is used (Yee and Fruchter, 1971) and like Gage (1955) previously suggest a shift away from the empirical keying of the instrument, to logical keying (Yee, 1967; Yee and Kriewall, 1969).

The MTAI and the TQ were completed by teachers in their own time, either at home or at school. No difficulty was experienced by teachers in the completion of the MTAI, although a few commented on the fact that a number of questions were 'duplicated' in the inventory, and wondered if these were included to 'catch them out'!

The MTAI manual quotes a number of reliability coefficients ranging from .88 to .93 for split-half (Spearman-Brown) and .84 for test-retest reliability. It is not clear from the manual, whether the 'split' was an odds-evens split or a correlation of the first 75 items in the inventory with the second subset of 75 items. In the present study, the teachers' responses to the MTAI were correlated on an odds-evens split ($r = .699$). This was adjusted by using the Spearman-Brown Prophecy formula (Fox, 1969) with the resulting higher correlation ($r = .82$), but which is somewhat lower, but not significantly so, than the reliabilities mentioned above, and is therefore a reasonable guide to the internal consistency of the instrument.

Cognitive Tasks

The initial concern was to obtain objective, paper and pencil measures of teacher attentional behaviour, particularly of the 'analytic' and 'synthetic' modes as outlined by Silverman (1970) and Pachella (1975). Not only has it been suggested that these dimensions may reflect early and later attentional processing, but also, that the 'analytic' dimension in particular appears to fit in with Witkin's (1954; 1962) notions of attentional (cognitive) style.

Tests from the Reference Kit of Tests for Cognitive Factors (French et al., 1963) were chosen for a number of reasons. The Kit was developed over a number of years to provide researchers with a series of tests measuring 24 factors; each cognitive factor was to be as pure factorially as possible. Furthermore, the authors assert that because of the common developmental background of the tests, this facilitates interpretation and confident objective comparison of one factor with another. A further reason was that it would be unlikely that teachers being tested would have had experience with these tests. Fleishman and Dusek (1971) report overall high test-retest reliabilities for a number of the tests in the Kit, with the majority of the coefficients above .80.

Four tests were selected from the Kit. The Hidden Figures Test (HFT) and the Hidden Patterns Test (HPT) are measures of Flexibility of Closure, tending to measure 'analytical' ability. The Gestalt Completion Test (GCT) measures Speed of Closure- the 'synthetic'attentional mode. A test of scanning behaviour was also included in the test 'battery'- the Identical Pictures Test (IPT)- a measure of Perceptual Speed.

The Hidden Figures Test

The Hidden Figures Test (HFT), an adaptation of the Gottschaldt Figures Test, popularised by Thurstone, was developed in the form used as a measure of Field Independence (FI), the 'analytic-global' dimension of Witkin. The HFT is one of a group of three tests measuring the cognitive factor 'Flexibility of Closure' (Cf), which the authors indicate, measures the ability to keep one or more definite configurations in mind, so as to make

identification in spite of perceptual distraction. The subject is required to search in a perceptual field containing irrelevant or distracting material in order to find one or more given configurations.

Witkin (1965) suggests that the term 'cognitive style' refers to the characteristic, self-consistent way of functioning an individual shows across perceptual and intellectual (ie. cognitive) activities. In other words, particular stylistic tendencies are not limited to an individual's perception, but are manifested in congruent forms in intellectual functioning (eg. Klausmeier et al., 1974). Individuals who are towards the Field-Independent (FI) end of the continuum tend to experience reality as delineated and structured; parts of the field are experienced as discrete, and the field as a whole- structured. Individuals, on the other hand, who tend towards the Field Dependent (FD) pole of the bi-polar continuum, tend to perceive reality as being dominated by the total experience, and parts of the field- fused. Furthermore, Witkin asserts, that these tendencies are life long attributes permeating an individual's total life style. Witkin (1969) quotes stability coefficients of .81 on some of his tests over a fourteen year period. He has also discussed the implications of these findings for education and teaching (Witkin, 1969).

Fine and Danforth (1975) have queried the relationship among a number of the Witkin tests, especially the relationship between the Embedded Figures Test (EFT) and the Rod and Frame Test (RFT). Wachtel (1972) believes that the very concept 'embeddedness' used by Witkin was generated from his paper and pencil test (EFT) and advises the maintenance of the distinction between the test and the construct it measures. Boersma (1968) has indicated that the HFT is probably a more economical test to use than the EFT, and notes that it will probably supersede the Group Embedded Test, as a measure of Field-Dependence/Field-Independence.

Coates et al (1975) quotes a number of studies (eg. Fitzgibbons et al., 1971; and Eagle et al., 1969) which suggest the FD people are more attentive to social stimulation, and are more accurate

in their memory for faces (Crutchfield et al., 1958; Messick and Damarin, 1964) and are more likely to spontaneously generate words indicative of socially relevant interest. On the other hand, FI individuals remember and prefer non-social stimuli (Goldberger and Bendick, 1972) Coates, in her study of urban middle-class pre-schoolers, found that whilst there was no sex difference in scores on the cognitive tests, there were large differences ($p=.01$) on the social orientation scale. She also found that both boy and girl FD children were more socially orientated than FI children. Davis (1975) found that FI subjects did better than FD subjects in compound-cue problems, whereas in single-cue problems, there were no differences between the two groups. Both these two studies give support to the notion that FI or analytic individuals are more concerned with and respond better in intellectual-objective activities than FD or 'global' individuals, who tend to be more socially responsive.

Consistent sex differences have been reported in the literature in performance on the HFT, and other measures of field dependence. Males, in general, tend to be more 'analytic' than females. However, Jackson et al., (1964) and Boersma et al (1969) found no or negligible differences in performance scores. Boersma reports that there were, however, significant differences in the time required to come to solutions (females took significantly longer) and Strauss (1969) has pointed out that the relationship between sex and performance on field dependence tasks is a complex one. Smith and Klein (1968) found a significant relationship between teacher awareness and psychological differentiation as measured by the EFT. Awareness was not of the 'minute by minute' variations in the classroom, but more of a concern and awareness of peer relationships and group structure, and an awareness of enduring dispositions of pupils within the classroom. This supports earlier data discussed, which suggests that male teachers tend to be more group orientated than women (Taylor, 1976). The bulk of the teachers in the Smith and Klein sample were women (58/69), and as no data regarding sex differences was given, it is assumed that there were no significant differences in the teachers' performances on the EFT, due to the sex of the teacher!

The HFT appears to be an adequate measure of Witkin's 'analytic-global' dimension, and appears to be related to stimulus-set processing as outlined by Broadbent (1970;1971). Some additional, but indirect support for the latter contention comes from Boersma et al (1969) who suggested that FI subjects showed a greater number of 'shifts' in corneal eye-movement between targets and alternatives presented on embedded figures tasks, thus indicating, they believe a more analytical approach to the task.

The Hidden Patterns Test

The Hidden Patterns Test (HPT) is not widely quoted in the literature. The HPT is a speeded test of 200 items in each of two parts. It is a much easier test than the HFT. Each item consists of a given geometrical figure in which (some only) a single given configuration is embedded. The task is simply to mark each pattern in which the configuration occurs. The HPT has its origins in Thurstone's Designs (French et al., 1963).

The Gestalt Completion Test

The Gestalt Completion Test was the second major cognitive test chosen. This test is based on the 'Street' figures, and measures the factor 'Speed of Closure'. Speed of Closure refers to the ability to unify or make sense out of an apparently disparate field into a single percept. It reflects the Leibnitzian tradition, in the sense that the individual has to be actively creative in order to 'make' the gestalt. In the Speed of Closure Test the individual does not know what he is looking for, whereas in the Flexibility of Closure Test, the subject looks for a given figure in a distracting field. In the Gestalt Completion Test (GCT), drawings are presented which are composed of black blotches, representing parts of the objects being portrayed. The subject writes down the name of the objects, being as specific as possible. In each part of the test, there are ten pictures; each part has to be completed within three minutes.

Teachers found this a most interesting test to take, and the time limit appeared to make little difference to eventual outcomes. It appeared that a subject could either make sense out of the blotches or he could not, regardless of the amount of time spent on any one

item. This information, however, was 'intuitive' as no variations were made in the time limits. There is very little research evidence available on this particular test.

Identical Pictures Test

The identical Pictures Test (IPT) is another, highly speeded test, in which the subject has to scan a line of five figures and check the one which matches or is identical with the one given at the left of the line. The test was chosen to tap the scanning ability of the classroom teacher, a notion implicit in Kounin et al., (1966) notion of 'withitness', where the teacher seemed to have an awareness of what was going on in the classroom all the time, to such an extent that to pupils it seemed as though their teacher had 'eyes in the back of the head'!

Cognitive Tests- Reliability

Fleishman and Dusek (1971) report test-retest reliability coefficients for the IPT (.82) and for the HFT (.72) for two samples numbering 83 and 85 respectively. Boersma (1968) recorded stability coefficients for total (.63 N=105) and part (.50;.51) HFT scores over a relatively short period of time. Jackson et al., (1964) reported much higher test-retest coefficients for HFT total scores (.90). They argued that this relatively high reliability warranted the use of the test for research purposes. Whilst they cautioned against the use of the part scores per se; Jackson and his associates reported high correlations between part scores and total scores (.88, part 1 to total score) on the HFT. No reliability coefficients are available in this investigation for HFT and IPT test scores. The indications are, however, that these two instruments have adequate reliability for research purposes.

Reliability coefficients were obtained for the GCT and HPT. Teachers were administered parts 1 of these two tests on two occasions, nearly six months apart. For the HPT the correlation between the two parts was .653 (N=36) and for the GCT .683 (N=36), and when corrected by the Spearman-Brown Prophecy Formula (for a test twice

as long) the coefficients were .79 and .81 respectively. These are adequate for research purposes.

To summarise, four test from the French et al., (1963) Kit of Reference Tests for Cognitive Factors were chosen to provide paper and pencil measures of teacher attentional behaviour. Test reliabilities quoted in the literature and obtained in this study indicate the suitability of these tests for research purposes. The HFT measures field dependence and apparently early attentional processing, and is akin to Broadbent's stimulus set material. The GCT measures 'synthetic' ability and possibly, later attentional processing, being akin to Broadbent's response set material. Both the IPT and the HPT are highly speeded tests, one a measure of flexibity of closure and the other employed to measure teacher scanning ability.

Teachers function within classroom situations in which the tempo of events is extremely rapid. At times, teachers have to focus their attention on individual or groups of pupils, or on their teaching behaviour, itself, ignoring or disregarding distracting stimuli. At other times, they are involved in making judgements from incomplete data, particularly of classroom events or incidents involving pupils. Similarly, teacher awareness may well be a function of his ability to scan the classroom for information. The three kinds of tests selected, were chosen in an attempt to capture these kinds of teacher attentional strategies, albeit through the media of paper and pencil tests.

The recognition that 'paper and pencil test behaviour' might not measure or reflect actual teacher attentional behaviour, led to the devising of a series of tests or tasks to which the teacher responded in terms of his perceptions. It was assumed that the abilities reflected in the paper and pencil tests of cognitive behaviour, would be manifested in the way teachers responded to tasks involving complex stimuli.

Test for Recall of Complex Stimuli

This test which involves teachers responding in a variety of ways to three video-tape extracts of teaching or quasi- teaching situations, was designed to tap the objects, incidents, events and the like, which had salience for the individual teachers on the video-tape extracts presented. The teacher is therefore, required to construct the meanings of these objects, events and so on, perceived on the tapes. Blumer (1966) indicates that symbolic interactionists assume that objects in the outside world, or the world portrayed on the tapes, do not have a pre-established character. They have no meaning at all, until human beings impose a meaning on them. So in responding to these video-tapes, teachers had to bring structure and order to their perceptions, particularly in question two, where teachers had to allocate priorities to items which had, for a number of reasons salience for them. From the symbolic interactionists' point of view, behaviour is not regarded merely as a response to environmental stimuli, but the direction of the individual's behaviour is seen as a construction based on the reciprocal give and take between the individual and his environment (Shibutani, 1961).

The very fact that teachers have to create their own reality and their own meanings suggests that in this very idiosyncratic creative act, attitudes and those memory aspects of stimuli, as pointed out by Gagné come to the fore in the structuring of the perceived reality. There then should be positive correlations between the kinds of responses made to these video-tapes, and attitudes as measured by the MTAI, and attentional styles as measured by the cognitive tests previously discussed. As far as this author is aware, there has been little, if any research into the perception of complex stimuli, particularly of the type employed in this research. Perhaps, the closest to this, is the research conducted into 'projective tasks' especially the TAT and Rorschach tests.

Teachers were, then, asked to respond to three extracts of video-tapes of educational situations. Each tape lasted approximat-

ely five minutes, and teachers were given about eight minutes to answer the five questions posed. The video-tape extracts were all new stimulus material for the teachers, although each of the situations taped would have been familiar to teachers. An explanation was given to the teachers, outlining the general nature of each taped extract, implicitly structuring somewhat teacher responses to the tapes. This was not thought to be harmful- helpful rather, in that it enabled teachers to concentrate on the tapes right from the beginning, and no time was lost by the teacher wondering about what was happening. A time limit for responding to questions was placed on teachers, and this is congruent with time demands placed upon teachers in the classroom.

The video-tape extracts were obtained from a variety of existing video-tapes and transferred onto one inch video-tape with no real loss of quality of picture or sound.(A description of the equipment used in the research is contained in Appendix 2). The equipment was set up in the music room of one school, and in the staffroom of the other school. Teachers sat in chairs and completed the questions resting the Recall of Complex Stimuli booklet on their knees (the booklet is included in Appendix 1). It may have been more appropriate to have had the teachers sit at desks. No teacher complained about the relative lack of comfort, though one or two did have some difficulty in seeing the monitor's screen.

After each extract was shown, teachers then completed the five questions relating to that particular extract. In all cases (over all the tapes) questions one, two and five were identical. Questions three and four were more specific, and were designed to ascertain whether or not designated aspects of the tapes had been 'picked-up' by the teachers. For the purposes of this research, questions 3,4 and 5 were ignored for analysis purposes.

The TQ; the MTAI and the Cognitive Tests were all comparatively easy to score, but such was not the case with the responses to the video-tapes. There were just over 900 responses to the first question, and over 300 responses to question two. This demanded a different technique of analysis. It was decided that 'content analysis' provided

the best technique for coping with this data.

Content Analysis - Test for Recall of Complex Stimuli

Content Analysis has been variously defined (Berelson, 1954; Holsti, 1968) but is basically a multi-purpose research method developed specifically for investigating a broad spectrum of problems in which the content of communication serves as the basis for inference (Holsti, 1968). In a very real sense, what is being attempted in content analysis is the quantification of qualitative data.

A central problem of content analysis is the selection and definition of categories into which the content units are to be placed. The size of the content unit to be categorised may range from the single word or symbol, through to a theme; sentence, paragraph or other grammatical units. Reliability in coding the units of content tends to be a function of the 'simplicity' of the coding system. High reliability, between observers or analysts can be achieved for relatively simple forms of content analysis, but where units are likely to be more complex, and hence perhaps, more useful, reliability tends to drop.

Initially, a random selection of the teachers completing question one in the Test for Recall of Complex Stimuli (TRCS) was made, and their responses to the question, for each of the three tapes, were placed on cards; one response to a card. These were then sorted in a variety of ways, in order to derive suitable content categories. It was decided that each response would become the unit to be coded, and five categories were created depending upon whether the dominant 'theme' of the response referred to a pupil or pupils; to the teacher or teaching; to interaction of any kind within the classroom; and the fifth category - the context or situation within which the action portrayed on the tape took place. The final category was a catch-all category, which attracted only 28 responses, and was thus ignored for analysis purposes.

Evening class students 'tried-out' the category system and had little difficulty with it. With the use of a naive coder, a high

degree of reliability (inter-coder) was obtained in the allocation of responses to categories (.936) based on the number of agreements divided by the number of agreements plus the number of disagreements (Johnson and Bolstad, 1973). Where there are likely to be differences in the number of items to be identified for coding purposes, the reader is referred to Clement (1976).

The coding of responses to question two was somewhat more difficult, because it was hoped to pick up some of the qualitative nuances in the analysis, unlike the coding of responses to question one, which was basically a frequency tally of responses in each category. The two analyses were separated by about three months. Additional categories relating to task; teacher's physical appearance; teaching framework; and so on, were added to those devised for question one. Using again, a relatively, unsophisticated coder, an inter-rater reliability of .83 was obtained for the over 300 responses to question two. Nine categories were outlined, including an 'other' category which was there if required. Where more than one idea appeared in the response, all ideas had to be coded.

An attempt was made to code for the 'tone' of the response or comment, but this had to be abandoned because of the difficulty in determining whether responses were encouraging, warm, critical, neutral and so on. Coders were asked to refer back to the original response in question one, where any response was cryptic or difficult to code. To assist in the coding, raters were given a set of key words or ideas likely to appear in each category (see Appendix 3).

The development of categories is a long and tedious business, and different investigators using content-analysis may well come up with alternative systems of coding the same data, depending upon the nature of the problem under consideration. It is also possible for the one investigator to derive different analyses of the same data, at different times. The reliability coefficients obtained typically refer to the reliability of raters using a

particular system of categories. It suggests nothing of the reliability of the teachers' responses, nor of the veridicality of their responses to the videotapes.

Phase One of the study, then, consisted in the administration of the TQ; the MTAI; the Cognitive Tests; and the Test for Recall of Complex Stimuli, over a six month period, to all teachers. Phase Two, which commenced when all aspects of Phase One were completed, consisted of the filming of eight teachers, four from each of the two schools. The procedures adopted for Phase Two of the investigation will now be outlined.

Phase Two

The final method of obtaining data on teacher attentional behaviour was the video-taping of the five female and three male teachers.

Murray (1970) traces the development and increasing role of the systematic observation movement in education. Murray believes that teachers are able to modify their existing teaching behaviours to enhance the facilitation of learning in their classrooms. He indicates that observation systems can be divided into two major kinds- a sign system which is essentially a list of classroom behaviours which the observer checks to see if they occurred within a specified period. The sign system is contrasted with the category system which attempts to check all behaviours that occur within a specified period of time, and which can be placed within pre-established discrete categories.

Both content analysis and 'systematic' observation techniques rely on the mutually exclusiveness of categories. In reality, however, such distinctions tend to be the abitrary decisions of the researcher, particularly, in borderline cases. It is at this stage that the 'hiddenagendas' implicit in the researcher, begin to operate. The arbitrariness of the decision-making can be lessened by the careful delineation of categories; but human behaviour rarely fits into such clear cut categories. Adams and Biddle (1970) believe that there are three advantages associated with the collection

of data by video-tape. The tapes enabled them to obtain a comparatively comprehensive record of activity within the classroom; and their use of the equipment enabled them to have a permanent record which could, through the use of play-back mechanisms, be analysed and re-analysed; and assisted in the preparation of the data for computer analysis.

Herbert and Attridge (1975) have prepared a guide for the users of observation systems, along similar lines to those guidelines prepared for psychometric tests (Adams, 1965; Cronbach, 1970). Whilst criticism can be levelled at the Herbert and Attridge attempt, they point to the need to look very closely at the constructs under examination; the validity of the observation system, and its reliability. There is a case for suggesting that observation systems should be regarded in a similar way to psychological tests, particularly, in terms of their construction.

The systematic observation approach, however, has its own intrinsic problems. The literature does not, for example, discuss the hazards of attempting to place cameras and microphones in classrooms where access is difficult. Rarely, is the influence of cameras and equipment in the room taken into account, except in a superficial way. Leaving cameras and equipment in classrooms for long periods of time, in order to obtain baseline behaviour, is costly not only in terms of the time involved, but also in the tying up of equipment which may be in demand. The possibility of concealing cameras and equipment raises very real issues of the 'ethics' of the researcher and his research. A further problem concerns the quality and reliability of the mechanical aids to observation, plus changes in environmental conditions may affect the quality of the recordings made.

In this study, the observation of the teachers in the schools meant that cameras and equipment had to be placed in the classrooms before the commencement of the lesson, and there appeared to the researchers to be both a psychological and physical intrusion into normal classroom life. However, the apparent intrusion of cameras, microphones, cable and the like did not appear to markedly affect

classroom interaction. The difficulty, of course, is that the effects of the intrusion can nver be known. The teachers, when questioned, believed that they had taught the lesson as intended, and indicated that cameras or no, they would have proceeded in the same way. All teachers stated that as they became involved in their teaching, for them, the cameras 'ceased to exist'. The children were 'prepared' for the filming, and their reaction to the filming was good. Many of them admitted 'forgetting' about the cameras as the lesson proceeded.

In participant observation and content analysis, the coder or observer, has to be selective in recording and organising data. The same problem also lies with the observer using mechanical means. In operating the cameras by remote control from outside the classroom, to lessen, of course, presence of outsiders, it became obvious that decisions were continually being made with regard to-

1..which camera to use;
2..on whom should the camera be focussed
3..from which camera should the recording be made
4..should special effects be used- eg employment of split screen
5..prior to filming, where shall the cameras and microphones be located.

It must be recognised that whatever is captured on tape, becomes the 'reality' to be analysed and re-analysed at future times.

The researcher plus a technician operated the cameras from a caravan, outside the classrooms. For the first part of the lesson the cameras moved around without a recording being made, so that the children and the teacher would become used to their moving around, when the recording was being made. After about ten minutes, a 'sweep' of the classroom was made, by one of the cameras, usually the one facing the children. This was an attempt to identify and locate all the children in the classroom. The second camera, placed in the classroom, was focussed directly on the teacher, and attempted to follow him around the classroom. The teacher wore a cordless microphone, so that all the comments made by the teacher were picked up on one of the audio channels.

The cameras were placed in the classrooms in corners diagonally opposite from each other, and where pupils in their normal classroom activity were not likely to trip over the equipment. The use of a 'split-screen' was discounted because of the amount of classroom activity missed, and the fact that as this camera would have had to be focussed on the teacher, a great deal of pupil activity, and pupil facial expression would have been missed. The second, perhaps, more compelling reason, was that most of the filming took place in relatively small classrooms, and full coverage of the teacher, and the class would have been impossible. Each teacher was filmed for approximately 35 minutes. The quality of the recorded film was good, though in one classroom, a marked change in evironmental conditions made the quality of recording from one camera only, very poor. As the teacher was wearing a cordless microphone, this freed the camera operators to search for interactions between teacher and pupil. The freedom allowed by the teacher's use of the cordless microphone meant that the camera operators were enabled to search the classroom for behaviours that were not responded to by the teacher.

Whilst for the purposes of this research, the concern was on those incidents to which the teacher attended, particularly, teacher verbal behaviour, as an indicant of teacher attention; an alternative and possibly more fruitful way of learning how teachers allocate their attention in the classroom, could well be by focussing on those objects, events or incidents that occur, and to which the teacher does not attend or respond. Noting that non-attending may in fact be different behaviour from non-responding behaviour. There is data on the video-tapes which may be helpful in further research along these lines.

Analysis of Filmed Teacher Behaviour

From the video-tape recordings of the eight teachers, it is possible to analyse the classroom activity in a variety of ways, using a variety of coding systems (seefor instance, Mirrors For Behaviour, Simon and Boyer, 1970). On the other hand, the observer may prefer to develop his own observational system depending upon

the problem being investigated. There are a number of limitations implicit in the use of mechanical aids to observation which must be recognised. The first limitation is the assumption, erroneously made, that the video-tape is a complete recording of the classroom activity; there may well be other realities not captured on the tape. Secondly, the coder or observer of video-tapes needs to recognise the dangers of inferring events, incidents and the like on the basis of camera-manifest behaviour. It is difficult to interpret bodily and facial expressions, or to interpret voice tones from audio recordings, alone. This raises real questions about the validity and reliability of systematic observation techniques. Reliability of coding can be accomplished in a manner, similar to that used in content analysis. But again, this tends to be in terms of inter-observer reliability. Establishing validity is a much more difficult process.

For the purposes of this research, teacher attentional behaviour was inferred on the basis of teacher verbal behaviour, primarily, and on the basis of his physical relationship with the target(s). In the absence of eye-cameras, and the like, it was extremely difficult to monitor teacher scanning or even gazing behaviour. It was assumed, therefore, that if a teacher was talking to a pupil, group or class, he was paying attention to the target. This is in line with research surveyed in the previous chapter. The inferences made, however, may be erroneous, as mentioned above.

A 'unit of interaction' or 'incident' was defined as a unit of teacher verbal behaviour, which is terminated by an interruption from a pupil, or other person; by the teacher obviously changing 'tack' moving from talking perhaps to an individual to the class, as a whole; by some physical movement away from the person being interacted with. The behaviour of the teacher is critical in the definition of the 'incident'; it is his behaviour which determines the end point of any incident. An incident may be as short as a 'grunt', or as long as a story being recited or told to the class. Questions in themselves do not constitute an incident, particularly when the teacher gives no real opportunity for answer, or does not expect an answer. An incident can, however, be a part of a

sequence of interaction between a teacher and a pupil,for example-

Teacher...."John what do you think about this?"
John "I'm not sure, it looks like....."
Teacher "Look very closely, John, before..... "
Mary "Please Mr Smith..."
Teacher "Mary, do not....."

In the above sequence, there would be three codable incidents.

Three kinds of target were identified- the individual pupil; a group of pupils (more than two, but less than the total class); and the class as a whole. Coders were instructed to code each incident for Target, in terms of the smallest identifiable target. Incidents were also coded for 'Function' (Adams and Biddle, 1970). There were again three subcategories within the broad Function category..... (see Appendix 4, for a fuller description of all categories)

1...Control...discipline or organisational arrangements-

2...Subject...a concern for subject matter; task and content.

3...Affective...sociation..feedback..social chit-chat

The last category into which incidents were allocated, was an attempt to discover whether or not teachers were 'proactive' or 'reactive' within the classroom, and initially two sub-categories were established- 'initiation' and 'responding' behaviour. However because of inherent inadequacies, the category was expanded to include 'soliciting' behaviour on the part of the teacher. Soliciting generally demands a response from a pupil. Directing behaviour was seen as teacher verbal behaviour which implied that children had no choice (eg. close the door)- there are inherent demands in this kind of behaviour. Responding behaviour was seen mainly as a 'reaction' to pupil behaviour, but without the 'soliciting' overtones. The final category 'initiation' was seen as being more 'proactive' than 'reactive' and was concerned to show the teacher as initiator of classroom events. Initiation occurred when there was a 'change of course' in the direction of classroom activity.

Each teacher's recording was broken into (approximately) three minute sequences, and each alternate 3 minute sequence was coded, resulting in approximately 21 minutes of each teacher's record being coded. Just under 1000 incidents were identified

in the 161 minutes of coded video-tape. One fifth of the 3 minute sequences were randomly selected and subjected to inter-reliability checks. Inter-coder reliability was in excess of .90, and bearing in mind, the relative unsophistication of the coders, reliability appears to be adequate. Intra-coder reliability was also in excess of .90. Coders had to code each incident three times- for Target; Function; and Action (the final category discussed).

Summary

This chapter has presented the case for the instruments, and procedures employed in attempting to cope with the data. The attempt has been to obtain a variety of measures of teacher attentional behaviour, and measures of the factors thought likely to play a part in structuring teacher attention. Each instrument utilised is independent of each other, in the sense that the 'constructs' underlying one measure are not implicit in any other, thus reducing the possibility of spurious correlations between the measures. It is expected, however, that positive correlations will exist between the various instruments used, and that taken together, a clearer picture of teacher attentional behaviour may emerge.

CHAPTER 5

THE TEACHERS

Introduction

The last chapter reviewed the data collection measures and strategies involved in this exploratory investigation. This chapter focusses on the teachers subjected to the 'testing' and examines the nature of the sample involved, in terms of the biographical information sought in the Teacher Questionnaire. The latter part of the chapter discusses very briefly a factor analysis of the Minnesota Teacher Attitude Inventory; and some of the statistical techniques used in the analysis of the data.

All teachers in two intermediate schools in a provincial city in New Zealand were asked to participate in the research. Intermediate School teachers were chosen for a number of reasons. Perhaps, the most important was that intermediate school teachers tend to have a greater freedom to experiment and modify the curriculum to satisfy local needs than secondary school teachers. The second reason was the need to obtain samples of male and female attentional behaviour, and it was much more likely that there would be a 'good mix' of sexes teaching at the intermediate level than at the primary school level. A third reason was the limited age range of the children under observation, and a fourth reason was that the researcher already had strong links with these schools, which facilitated access to them.

In all, thirty five teachers completed all aspects of Phase One of the study. There was an apparently high attrition rate from the original 51 teachers completed Parts 1 of both the HFT and GCT. But, when it is considered that some of the original 51 teachers were student teachers, and not present on the second occasion; and that some of the teachers were 'specialist teachers who felt that some of the instruments 'did not apply to them', the attrition rate was not so high. Teacher absenteeism on one or other of the 'testing occasions' accounted for the remaining 'non-participants'. Teachers, in all, completed well over two hours of 'testing', and it was surprising therefore, that the attrition rate was not higher.

Permission to enter the schools was obtained from the District Senior Inspector of Primary Schools for the local area.

Sample Characteristics

Of the 35 teachers who completed all parts of Phase One, 20 were male, and 15 female, a marked contrast to the general primary school teacher population (Archer, 1976). Of the 45 teachers who completed the TQ, 24 were male and 21 female. It is not known whether these 45 teachers were atypical in terms of their sex distribution when compared with teachers in intermediate schools throughout New Zealand. The generalisability, however, of these results is not an issue, and there is no suggestion that the sample of teachers involved in the study represent teachers in general.

There were no significant differences between the sexes (criterion p=.05) in terms of age; number of schools taught in; class level taught; qualifications held; length of teacher training; years of teaching experience; positions of responsibility within their schools, whether for remuneration or not. Males, however, were significantly more involved in professional activities. Female teachers on the other hand, were more likely to have taught outside the province than male teachers.

Where there was an assumption of an underlying continuous distribution of scores, the Kolmogorov-Smirnov Two Sample Test was used. Siegel (1956) suggests that the Kolmogorov-Smirnov test has high power efficiency (about 96%) when compared with the t-test for small samples, and appears to be more powerful in all cases that either the Chi Square test or the Median test. Where no assumption could be made about the underlying distribution of scores being continuous, the X^2 two sample test was used. In many cases within the study, data was cast into 2 X 2 tables.

The following table (Table 5:1) sets out the manner in which various biographical details were analysed by the sex of the teacher.

Table 5:1

Biographical Data obtained from the Teacher Questionnaire, by the Sex of the Teacher

VARIABLE	TEST *	STATISTIC
Age	Kolmogorov-Smirnov Two Sample Test (one tailed) **	X^2 = 5.806 2df n/s
Number of Schools taught in	as above	X^2 = 0.613 2df n/s
Length of teacher training	as above	X^2 = 0.841 2df n/s
Years of teaching experience	as above	X^2 = 4.129 2df n/s
Professionalism Scale	as above	X^2 = 9.64 2df p= .01
Non-paying positions of responsibility	as above	X^2 = 3.27 2df n/s
Paying positions of responsibility	2_2X 2 Table X^2 Test for Two Independent Samples	X^2 = 2.278 1df n/s
Area in which taught	as above	X^2 = 4.027 1df p= .05-.02
Class level taught	as above	X^2 = 2.02 1df n/s
Qualifications held	as above	X^2 = 1.61 1df n/s

*all tests are two tailed. Formula specifies values for one tailed test, so proability levels have to be doubled.

Males and females differed in terms of the experiences which they thought had assisted in their personal development and/or their development as teachers, as is shown in the following table. More female teachers than male teachers declined to respond to this particular question, as has previously been noted (ie. 9 females 5 males (p lies between .10 and .05 - X^2= 3.502 1df). Only two responses from each teacher were considered.

Table 5:2

Developmental Experiences Reported by Sex of Teacher

Nature of Reported Experience	Males		Females	
	f	%	f	%
Travel	6	19.4	5	31.25
War Service	8	25.6	0	-
Own Schooling and Teaching	2	6.5	3	18.75
Univeristy and Training College	4	12.9	0	-
Work with Church/Youth groups	2	6.5	0	-
Vacation work experiences	3	9.7	1	6.25
Previous work experiences	4	12.9	2	12.50
Family resposibilities	2	6.5	5	31.25
	31	100.0	16	100.00

Teachers 31 years of age and over (14 male; 10 female), tended to have less teacher training than those teachers 30 years and under (10 male; 11 female) (p lies between .05 and .02); had more teaching experience (p less than .001); had taught in more schools (p less than .001) and were more likely to hold paying positions of responsibility (p between .01 and .001); and were more likely to be involved in professional activities (p=.05). However, there were no differences between the two age groups of teachers in terms of qualifications held; number of non-paying positions of responsibility accepted; the level of class taught; and the location of the schools that they had taught in.

There were 21 teachers under the age of 31, and they tended to emphasise travel; university and training college experiences; and experiences gained in vacation work as making perceived contributions to their personal and professional growth. Teachers 31 and over also stressed travel, as well as war service; previous work experiences and the experiences gained in bringing up a family, as those experiences making an important contribution to their development as people and teachers. There was no significant difference between the two age groups in the total number of experiences proffered (criterion p=.05).

Age and sex have been considered important variables with regard to attentional style, and it appears from the data above that very few significant differences exist between male and females teachers in terms of the information collected by the TQ. Age, appears to play its part in the expected directions, (for instance, more years of teaching experience; larger number of schools taught in; rise in status, and so on). It is only recently that a compulsory three year teacher training programme has been introduced for teacher trainees, and it is therefore not surprising therefore, to discover that older teachers tend to have had less time in formal teacher training.

In general, there were no statistically significant differences between male and female teachers in their performance on the cognitive tests, except for male teachers who tend to make higher scores on the HFT. This is in line with the bulk of the research into embedded type tasks. In all cases male teachers appear to be more variable in their performance on the cognitive tests.

Table 5:3

Performance on the Cognitive Tests, by Sex of the Teacher

Test		Males (N=20)	Females (N=15)	Total (N=35)	M v F 't' (33 df)	p
*HFT	Mean	7.90	4.47	6.43	3.1263	.01-.001
	s.d.	3.61	2.59	3.61		
HPT	Mean	87.30	89.73	88.34	-0.3978	.20
	s.d.	21.50	11.35	17.69		
*IPT	Mean	36.55	37.07	36.77	-0.2340	.20
	s.d.	7.12	5.46	6.38		
GCT	Mean	11.05	10.33	10.74	0.4576	.20
	s.d.	5.00	3.96	4.53		

*Part 1 only

In all cases above, the 'F' ratio was calculated to determine the homogeneity or otherwise of the variance, and hence the 't' test formula which should be employed. Evidence previously provided does not indicate that scores on these cognitive tests

are likely to markedly deviate from the 'normal' rendering use of the 't' statistic harardous. Popham does suggest that the assumptions underlying the 't' test are 'quite lenient', and that marked departures from these assumptions may still mean that the 't' values obtained are capable of interpretation (Popham, 1967).

Further analyses of the cognitive tests in terms of the biographical and other data is presented in the following chapter.. In order to facilitate use of the data from the MTAI, particularly, in the light of the criticism of the use of the total MTAI scores (Horn and Morrison, 1965; Yee and Fruchter, 1971), it was decided to factor-analyse the MTAI, to ascertain whether or not New Zealand teachers responded to the instrument in a 'similar' manner to their counterparts in the U.S.A.

Factor Analysis of the MTAI

Horn and Morrison (1965) after reviewing a number of factor-analytic studies of the MTAI, questioned the assumption that the MTAI is measuring one attribute- a uni-factor attitude involving at the one extreme, a belief in and preference for 'democratic' as against 'autocratic' values. Horn and Morrison found that the five factors extracted fell into a positive manifold, giving some credence they suggest to the authors' claim for uni-demenionality. Thus, they consider, that while on occasions it may be useful to speak of the MTAI measuring a single trait, it will often be necessary to recognise that several, largely independent response consistencies are represented by the total score on the MTAI.

Yee and Fruchter (1971) point out some of the deficiencies in the Horn and Morrison methodology, and yet, with access to a larger computer, capable of handling a factor-analysis of all the 150 items in the MTAI, their results bear a strong resemblance to those of Horn and Morrison. Yee and Fruchter then suggest that further cross-validation will not significantly produce radically different outcomes. They believe that the MTAI's construct validity is uncertain when the total score is used. Yee and Fruchter (1971) suggest that their factors, 1;11;111, fit in with Kerlinger's (1967)

notion of 'traditionalism', and that factors IV and V, are akin to Kerlinger's 'progressivism'. Kerlinger (1967) and Marjoribanks and Josefowitz (1975) regard the two dimensions as accounting for most of the variance in educational attitudes, and suggest that rather than their being regarded a bi-polar continuum, they should be considered as being relatively independent dimensions.

For a number of reasons, including the inability of the B6700 computer to handle the 150 items in the MTAI; together with the limited number of teachers in the sample, it was therefore decided to shift away from an 'R' analysis of the MTAI to a 'Q' analysis. The Q-analysis, in a very real sense 'clusters' together teachers who respond to the MTAI in a similar manner (Kerlinger, 1964). Guiford (1954) discusses the nature of the Q and R techniques of factor analysis, and raises the question of whether or not factors obtained by R and Q analyses are comparable.

"Writers do not aggree on the answer to this question. The best conclusion seems to be that what the Q-technique brings out is the personality types or syndromes. Persons having outstanding combination of traits in common will show these as factors in the Q-technique. Only when a syndrome is dominated by a single common factor could a Q-technique coincide with an R-technique." (p.529)

The SPSS program Factor was used to extract principal factors, which were then orthogonally rotated, utilising the Varimax procedure. Only factors with eigenvalues in excess of 1.0 were considered for interpretation, and teachers loading beyond the .05 level were considered as contributing to the 'meaning' of that factor. Where any teacher loaded on more than one factor, he was arbitrarily placed on the factor, on which he loaded highest.

Three factors emerged with eigenvalues of 1.0 and above, accounting for 83.6% of the total extracted variance. It was found that teachers loading significantly on factor 1 made significantly higher Total MTAI scores than those on factor 2. This is interpreted to mean that Q1 teachers in general, tend to have significantly stronger, and more positive attitudes to pupils than those on factor Q2 (see Table 5:5). In the extreme score analysis presented in the next chapter, the'Other' group was ignored.

Table 5:4

Q Factor Means and Standard Deviations*

	Q1	Q2	Q3+Other
N	18	10	11
Mean	153.94	108.80	130.36
s.d.	24.09	25.93	35.57
%total extracted Variance	71.1	7.5	5.0≠16.4

't'				
	1	v	2	4.52 p= .001
	2	v	3+Other	0.65 p= .20
	1	v	3+Other	1.94 p= .10-.05

*Note Only 4 teachers loaded significantly on Q3, so they were amalgamated with all other teachers who did not load significantly on Factors Q1 and Q2.

Further analyses of the MTAI in terms of biographical and other variables are presented in the following chapter.

In summary, data was obtained from a variety of measures raging from paper and pencil ability type tests; to teacher attitudinal and biographical measures; and'projective' tasks which were analysed, through the use of content-analysis. In Phase Two, of the study, teacher verbal behaviour was used as an indicant of teacher attention. These varied approaches to the 'attention' construct, resulted in a great deal of'rich and complex' data. The categories developed in the content analyses, and the categories which emerged as a result of the viewing of teacher behaviour on video-tape arose from the data. No structure was placed on the data in terms of a priori assumptions, hypotheses, or coding systems. This suggests that links between the data, particularly in terms of correlations (Pearson Product Moment, or Spearman-Rank correlation coefficients, depending upon the nature of the data) may well be suggestive rather than definitive. It could well be that the criterion level (p=.05) normally thought, by convention only, to be appropriate, may in fact be inappropriate in an exploratory study (see Labovits (1968) on the sacredness of .05). Phase One of the study provides a series of 'reference points' against which the teachers participating in Phase Two of the research can be compared and contrasted. The Phase Two analysis

is mainly in terms on non-parametric statistics, where the assumptions of parametric tests cannot, for a number of reasons be met. A unique value of certain non-parametric test procedures, is that they can be used to treat data which have been measured on nominal or classificatory scales. Furthermore, where significant statistical differences or relationships are found (however defined) by non-parametric methods, then, it is highly likely that a very significant relationship would exist, if measured by parametric means, assuming of course, that these are available. Where numbers are particularly small, and the Chi Square Test cannot be used, the Fisher Exact Probability test was employed (Siegel, 1956) The non-parametric equivalent of the 't' test was also used where appropriate (ie the Mann-Whitney U-Test).

CHAPTER 6

RESULTS

Introduction

The first part of the chapter sets out the main results of Phase One of the investigation. These results will provide a background for the presentation of the Phase Two results in the latter part of the chapter. The Phase One results should, in fact, be considered as reference points in the exploration of the data obtained from the 'in situ' observations of teacher attentional behaviour.

Any exploratory study is concerned not only with broad based similarities which may emerge from the data analysis, but also concerned with differences which may become apparent. These two approaches to the data are inter-related. The results presented for Phase One of the study will reflect these approaches; first of all, by presenting correlational and factor analyses of the data, and secondly, by the analysis of the scores of identified 'extreme groups'.

Phase One Results

Zero-order correlations of the raw scores obtained by the teachers on all the cognitive tests are shown in Table 6:1. As the sex of the teacher has been shown to be a function in the performance on these tests, correlational coefficients are presented therefore, for males; females and total sample.

The striking finding, is the marked independence of the HFT as ameasure of perceptual (attentional) activity, from the other three measures. For male teachers, there appears to be a strong positive relationship between the GCT and IPT test scores. The relationship between these tests for females is not as strong (p lies between .10-.05), perhaps, a function of the small number of female teachers completing the tests. For males, there is also a positive relationship between the GCT and HPT. Interestingly, the male and female patterns of relationships between these two variables, are in opposite directions, although neither was

statistically significant. Both of these latter tests are highly speeded; one, the HPT requires 'extractive' processing, whereas the IPT requires matching ability. The pattern of relationships for the Total Sample, tends to follow that for the male subsample.

Table 6:1

Zero-order Pearson Product Moment Correlations for Males; Females; Total Sample Teachers on Four Cognitive Tests.

		HFT	HPT	IPT	GCT
Males	(N=20)				
HFT		-	272	131	088
HPT		-	-	358	478*
IPT		-	-	-	679**
GCT		-	-	-	-
Females	(N=15)				
HFT		-	-085	068	381
HPT		-	-	-334	043
IPT		-	-	-	468
GCT		-	-	-	-
Total Sample	(N=35)				
HFT		-	136	080	190
HPT		-	-	199	362*
IPT		-	-	-	608**
GCT		-	-	-	-

* p less than .05
** p less than .01

Note- decimals omitted

Teachers' responses to the three video-tapes (question1) were placed into one of four categories depending upon the nature of the 'theme' of the response. If the emphasis appeared to be on the pupils or a pupil, the response was allocated to the 'Pupil' category. If the response related to the teacher, or to teaching, it was placed in the 'Teacher' category. If the theme concerned relationships or interaction between the pupils; teacher or others, the response was placed in the 'Interaction' category. Finally, responses placed in the 'Other' category, were those responses reflecting an interest in the physical, situational, or contextual aspects in which the action on the video-tapes took place.

Each response was therefore, independent of each other. There were no significant differences between male and female teachers in the number of responses allocated to each category, and none of the correlational coefficients computed for the male and female subsamples achieved the .05 criterion. The Total Sample correlation coefficients are shown in the following table.

Table 6:2

Zero-order Pearson Product Moment Correlation Coefficients- Total Sample Responses Allocated to Four Categories Question 1 TRCS

Total Sample (N=35)	Pupils	Teacher	Interaction	Other
Pupils	-	208	395*	-252
Teacher	-	-	171	-285
Interaction	-	-	-	-336*
Other	-	-	-	-

* p less than .05

Note- decimals omitted.

There appears to be a positive and statistically significant correlation between responses allocated to the 'Pupil' category and responses placed in the 'Interaction' category. In addition, there appears to be a significant negative correlation between the 'Interaction' and 'Other' categories. Correlations between the 'Other' category and the three other categories are all negative. A suggestion, perhaps, that those teachers who focus on the 'objective' aspects of teaching, the physical environment and context, tend not to be so concerned with pupils, teacher-role, and interactional aspects of teaching.

Further exploration of these scores was carried out by the means of a series of factor analyses of the data. For this purpose, raw scores were converted into normalised T scores (Guilford, 1956), and three of the analyses of the data are presented in the following table- (Table 6:3)...

Table 6:3 Factor Analyses of Selected Phase One Variables

A....Analysis 1 - Factor Analysis of Cognitive Tests Only (N=35)

	Factor 1
HFT	181
HPT	370
IPT	640
GCT	968

(1 factor emerged - eigenvalue 1.516; accounting for 100% of extracted variance)

B....Analysis 2 - Factor Analysis of Cognitive Tests, and Responses to Video-tapes (Question 1) (N=35)

	Factor 1	Factor 11
HFT	093	131
HPT	108	-176
IPT	672	-054
GCT	766	-095
Pupils	342	480
Teacher	-004	503
Interaction	661	416
Other	008	579

(Both factors had eigenvalues in excess of 1.0; 57.7% and 29.8% of extracted variance accounted for by the two factors respectively)

C....Analysis 3 - Factor Analysis of Cognitive Tests; Responses to Video-tapes; MTAI and Sex of Teacher. (N=30)*

	Factor 1	Factor 11	Factor 111	Factor 1V
HFT	263	-167	-037	-599
HPT	336	088	-085	-047
IPT	681	061	-060	-041
GCT	749	100	-039	-174
Pupils	686	-152	241	120
Teacher	042	-177	875	-097
Interaction	683	-268	064	053
Other	-004	947	-137	014
Total Responses	717	389	573	-009
MTAI	239	097	-099	-013
Sex of Teacher	202	-157	-148	814

(The first three factors all had eigenvalues in excess of 1.0, and accounted for 76.7% of extracted variance. Factor 1V had an eigenvalue of .90744, and if included in the discussion would increase amount of variance extracted to 89.5%)

*MTAI Total Scores used in this analysis

When N=35; df = 33 p.05= r=.334; p=.01 r=.430

The SPSS program 'FACTOR' (Burroughs B6700) was used to extract principal factors, which were then rotated to simple solution, utilising the Varimax procedure. These results need to be cautiously interpreted in the light of the relatively small number of teachers in the sample (note however, that the ratio of teachers to variables, is at the least, approximately 3:1, whereas, in the proposed R analysis of the MTAI, the ratio would have been in the other direction- approximately 1:5).

The first analysis investigated the relationship among the cognitive tests only. This factor is dominated by the GCT and IPT. In this factor, which might best be described as a scanning-closure attentional style; the focussing attentional style as epitomised by the HFT, plays little role. In fact, the marked independence of the HFT from all other measures on this factor is perhaps, indicative of differing levels of processing of sensory data. The Total Sample analysis may, however, mask sex-specific differences previously noted.

The second analysis explored all the 'attentional' measures employed in Phase One of the study. The underlying structure of these attentional measures can be seen in terms of two factors. Factor 1 is dominated by the scanning-closure variables, plus substantial loadings from two other variables- 'Interaction' and 'Pupil' categories. This suggests that this factor may be measuring 'an awareness of relationships', which not only involves scanning behaviour, the searching for social cues, but also the dynamic 'creative' act of forming a gestalt from these disparate cues, possibly with the focus on pupils. Again, the HFT tends to be somewhat idenpendent of this factor. Factor 11 has high loadings from video-tape category variables and low and non-significant loadings from the cognitive tests, suggesting that this factor measures teacher behaviour which is somewhat independent of the kind of behaviour measured by the cognitive tests. In other words, from the second analysis, two factors emerge, one concentrating on the cognitive tests, but with substantial 'penetrations' from two videotape response categories, and the second factor which loads only on the video-responses. The HFT does not load on either factor.

The third analysis shows a similar pattern to that obtained in the second analysis. The addition of three additional variables does, however, make for some modifications, which will be commented upon. The reduction of the number in the sample from 35 to 30, in the third analysis caused by the inclusion of the MTAI in the third analysis, is not thought to make any significant difference to the overall pattern of variable loadings.

Factor IV is dominated by the relationship between the sex of the teacher and HFT scores. All this means, is that high scorers on the HFT tend to be male. This fact has been commented upon previously.

The addition of the three new variables, separates out the variables which load significantly on Factor II in the second analysis. Factor III has two variables which load highly and significantly upon it. 'Teacher' category responses dominate this factor. The other variable to load highly on this factor, is 'Total Responses'. Perhaps, all this indicates , is that the two variables correlate with each other. Teachers who allocated responses to the 'Teacher' category may represent those who have a different approach to teaching, from that implicit in Factors I and II; certainly, this factor presents a view of teaching dominated by a concern for the teacher and his role.

Factor II, like Factor III, is dominated by a single variable- the 'Other' category, suggesting an overiding concern for the physical and situational (context) aspects of teaching, whereas, Factor I appears to demonstrate an interest in the relational aspects of teaching, with high loadings from the 'Pupil'; 'Interaction'; IPT and GCT variables, in addition to 'Total Responses'. There are slight but positive loadings on Factor I from the MTAI; HFT; and sex variables, none of the latter, however are statistically significant.

The MTAI and the HFT failed to emerge in any of the interpretable factors as influential variables.

In summary, it appears that the GCT and IPT have strong links with each other, and that what is being measured by these two tests is relatively separate and distinct from that measured by the HFT. The GCT and IPT tend to be positively related to responses from the video-tapes placed in 'Interaction' and 'Pupil' categories. These four variables load on Factor 1 (third analysis) and is suggestive of the fact, that this factor may be measuring the attentional ability to categorise and respond to social interaction and relationships. It is interesting that despite the two radically different approaches to the construct 'attention' (the cognitive tests on the one hand; and on the other hand, responses to the video-tapes) that strong communalities emerge. A further finding suggests that teachers' responses to 'Teacher' and 'Other' categories tend to be independent of each other (Factors 111 and 11 respectively) and independent of the factor stressing scanning-closure-interaction and relationships.

The search for differences between variables is facilitated by the consideration of the 'extreme' scores obtained through the 'dichotomising' of variables. The MTAI was dichotomised utilising the Q-factor analysis which separated the teachers into two distinct groups on the basis of the patterns of their responses to the MTAI. These two Q-groups were found to be significantly different in terms of their total scores on the MTAI. The Q1 group made significantly higher scores (total scores) on the MTAI than the Q2 group, suggesting that the Q1 group tends to have more positive attitudes to students than those in the Q2 group, (as measured by the MTAI). The Q-analysis presents an elegant and objective way of clustering together teachers who make similar responses to the MTAI.

Scores made by teachers which fell within plus or minus of one-half a standard deviation of the mean for the total sample, were ignored for 'extreme analysis' purposes. Neither was an 'extrme analysis' performed on the HPT and the IPT, as these have been shown to load significantly on the factor best represented by the GCT; and on which the HFT tends to load minimally; thus, the extreme analysis will only concern the HFT and GCT cognitive variables, as these appear to be relatively

independent of each other.

Extreme Score Analyses

MTAI

The Q-analysis of the MTAI revealed two groups of teachers- Q1 and Q2, who differed significantly in terms of their total scores made on the MTAI. 18 teachers loaded significantly on Q-factor 1; whereas, 10 teachers loaded significantly on Q-factor 2. In relation to scores made on the cognitive tests, no data was available (through attrition) for five teachers in Q1, and one teacher in Q2.

The analysis revealed no significant differences between the two Q-groups of teachers on the cognitive tests, nor on the biographical data obtained by the Teacher Questionnaire, except on the 'professionalism' scale. It appeared that Q1 teachers tended to be more significantly involved in professional activities than Q2 teachers (p lies between .05 and .025-two tailed).

Table 6:4 summarises this data. 2 x 2 tables were constructed and the Chi^2 test or the Fisher Exact Probability Test was used to test for significant differences between the two Q-groups on the data for the various variables. Following Guilford (1956) no calculations of the X^2 statistic were computed when expected frequencies in any cell were less than 2. The Yates correction was not used.

Thirteen teachers in group Q1, and eight teachers in group Q2 completed questions 1 and 2 in the Test for Recall of Complex Stimuli. In response to question 1; Q1 teachers made 338 responses compared with the 226 responses made by the Q2 group teachers. There also appeared to be a statistically significant difference between the two Q-groups in terms of their patterns of responses to the question, over the four categories- Pupil; Teacher; Interaction; and Other; as is evident from the table below (Table 6:5).

Table 6:4

Performance on Cognitive Tests; Biographical Information by Extreme Scores on the MTAI

		MTAI Q-groups Q1	Q2	
Cognitive Tests				
HFT	Highs	5	3	
	Lows	5	2	n/s*
HPT	Highs	4	2	
	Lows	4	4	n/s*
IPT	Highs	4	0	
	Lows	5	4	n/s*
GCT	Highs	4	1	
	Lows	3	4	n/s*
Biographical Information				
Sex of the Teacher	Males	9	6	
	Females	9	4	n/s*
Age of Teacher	30 and under	6	3	
	31 and over	12	7	n/s**
Qualifications	TTC only	6	5	
	TTC plus	12	5	n/s**
Professionalism Scale	3 and less	7	8	
	4 and above	11	2	X^2 = 4.368 1df p=.05-.025
Years of Teaching	15 and under	11	5	
	16 and over	7	5	n/s**
Level at which taught				
	Intermediate and Primary only	7	7	
	Above + secondary/primers	11	3	n/s*
Where Taught				
	Present Province only	4	5	
	other areas of NZ + above	14	5	n/s**

*Fisher Exact Probability Test- Table I (Siegel, 1956)

** X^2 Test for Two Independent Samples 1df

all tests- two tailed.

Table 6:5

Allocation of Responses to Video-tape Categories- Question 1 TRCS by Extreme Scorers on the MTAI

	Pupils		Teacher		Interaction		Other		Total	
	f	%	f	%	f	%	f	%	f	%
Q1 (N=13)	111	32.8	72	21.3	79	23.4	76	22.5	338	100.0
Q2 (N= 8)	67	29.6	64	28.3	35	15.5	60	26.6	226	100.0

X^2 = 8.2927; 3 df; p lies between .05 and .02

The pattern of responses for the Q1 group of teachers differs significantly from that of the Q2 group of teachers. There may be some doubt, however, about the validity of such an interpretation, (Kerlinger, 1973). The Mann-Whitney U-test was computed for each category (Roscoe, 1975; Siegel, 1956), and there was a significant difference in the rankings of scores between the two Q-groups, only in terms of the 'interaction' category, (U = 26; z =1.925; p=.027). This suggests that high scorers on the MTAI (those in Q-group 1) are more likely to allocate responses to the Interaction category, than teachers in the Q2 group.

The responses to question 2 TRCS were weighted to take into account, notions of importance implicit in the question. Responses were allocated into categories, and the frequencies then multiplied by three if they were 'most important'; by two, if next in importance and by one, if third in importance. From the following table (Table 6:6) is is apparent that Q1 teachers allocated their priorities somewhat differently from Q2 teachers, but not significantly so.

Table 6:6

Allocation of Responses to Video-tape Categories Question 2 TRCS by extreme scorers on the MTAI

	MTAI Q-Groups			
	Q1 (N=11)		Q2 (N=7)	
Response Category	f	%	f	%
Pupil Characteristics	47	20.98	36	27.48
Pupil Behaviour	19	8.48	11	8.40
Teacher Characteristics	11	4.91	3	2.29
Teacher Behaviour	45	20.09	22	16.79
Teaching Framework	25	11.16	16	12.21
Situational Variables	22	9.82	23	17.56
Relational Variables	54	24.11	20	15.27
Task Variables	1	.05	-	-
	224	100.00	131	100.00

Cognitive Tests

High scorers on the HFT did not differ significantly from low scorers on the test, in terms of the cognitive variables , or in terms of the biographical variables contained in the Teacher Questionnaire, except, as expected, in terms of the sex of the teacher. 10 of the 11 teachers in the 'high' HFT group were male, whereas, only 4 out of the 11 in the HFT 'low' group were male (Fisher Exact Probability Test; Siegel, 1956; Table I p=.05 two tailed).

There were only chance differences between the two groups of 'high' and 'low' scorers on the HFT in terms of membership of MTAI Q-groups, and in the allocation of responses to the four categories in question 1 TRCS, as the following table shows.

Table 6:7

Allocation of Responses to categories in Question 1- TRCS by Extreme Scoring Groups on the Hidden Figures Test

	Pupils		Teacher		Interaction		Other		Total	
	f	%	f	%	f	%	f	%	f	%
HFT High (N=11)	105	34.20	72	23.45	58	18.89	72	23.45	307	99.99
HFT Low (N=11)	77	27.40	76	27.05	57	20.28	71	25.27	281	100.0

There did however, appear to be a significant difference in the priorities allocated to categories in response to question 2 in the Test for Recall of Complex Stimuli, between the high scoring group on the HFT, and the low scoring group. High HFT teachers appeared less likely to make pupil responses a high priority; high scorers on the HFT, were however, more likely to allocate priority to the 'Teaching Framework' category (a concern for the goals and objectives of teaching. A Chi^2 Test was conducted on the data contained in Table 6:8 (X^2 = 17.2469; 7df p lies between .02 and .01) with the largest contributors to the total Chi^2 statistic coming from the 'pupils' characteristics' category, and from 'Teaching Framework'. Neither, however reached statistical significance when computing Mann-Whitney U-Tests on the data.

Table 6:8

Allocation of Responses to Video-tape Categories Question 2 TRCS by Extreme Scorers on the Hidden Figures Test

Response Category	HFT Extreme Groups High (N=10) f	%	Low (N=10) f	%
Pupil Characteristics	39	18.14	52	27.37
Pupil Behaviour	17	7.90	14	7.37
Teacher Characteristics	12	5.58	12	6.32
Teacher Behaviour	29	13.49	32	16.84
Teaching Framework	50	23.26	20	10.53
Situational Variables	23	10.70	27	14.21
Relational Variables	45	20.93	32	16.84
Task Variables	-	-	1	0.52
	215	100.00	190	100.00

Teachers making extreme scores on the GCT did not differ in terms of their performance on the HFT and the HPT, but as would be expected, there was a significant relationship between the IPT and the GCT. Twelve teachers were identified as belonging to the High GCT group, and twelve to the Low GCT group. As with extreme groups on the HFT, extreme groups on the GCT did not differ between each other in terms of the variables in the Teacher Questionnaire, or the two Q-groups of the MTAI. There were only chance differences between the two extreme groups on the GCT in terms of the allocation of responses to both questions 1 and 2 in the Test for Recall of Complex Stimuli.

In summary, it can be stated that the 'extreme score analysis' did not really add much more than had already been gained by the correlational and factor analyses, particularly in terms of the extreme scorers analysis of the two cognitive tests. Q1 group teachers on the MTAI did differ from Q2 group teachers in terms of scores on the professionalism scale, and the allocation of responses to the 'Interaction' category. High HFT scorers did appear to allocate priorites to the various categories in question 2, differenlty from those teachers in the Low HFT group. High HFT teachers tending to be more concerned with the objectives and the goals of teaching, and less interested in 'Pupils' characteristics'.

The three video-tapes shown to the teachers varied in content and as a result teachers' perceptions and hence priorities allocated to response categories tend to differ with the content of the presented video-tape, as Table 6:9 shows.

Table 6:9

Responses Allocated to Categories in Question 2 TRCS by the Video-tape Responded to - Percentages and Ranks

Response Category	Video-tape Presented					
	1		2		3	
	%	Rank	%	Rank	%	Rank
Pupil Characteristics	29.6	1	5.26	6	20.18	3
Pupil Behaviour	9.6	5	15.79	3.5	4.59	6
Teacher Characteristics	4.0	7	3.16	7	2.75	7
Teacher Behaviour	17.6	3	15.79	3.5	22.94	2
Teaching Framework	12.0	4	10.53	5	24.77	1
Situational Variables	6.4	6	28.42	1	6.42	5
Relational Variables	20.0	2	21.05	2	18.35	4
Task Variables	0.8	8	-	8	-	8
	100.0		100.0		100.0	
Weighted toal number of Responses	125		95		109	

The rankings for tapes 1 and 3 show a marked similarity (rho =.76; p = .05 two tailed), whereas tape 2 differs from both 1 and 3 in the rankings of the variables. Despite the rankings, the tapes presented to the teachers elicited differing patterns of responding, suggestive perhaps of the task-specificity which may dominate attentional processing.

Phase One Results- Summary

For the reference group of teachers (the total sample), it appeared that the GCT and IPT were closely intertwined. The HFT appears to measure something quite distinct and separate from the GCT. In the factor analyses, it became obvious that the GCT; the IPT; the 'Interaction' and 'Pupil' categories loaded highly, positively and significantly on Factor 1. Factor 11 had high loadings from the 'Other' category, and Factor 111, from the 'Teacher' category, and total number of responses to video-tapes. In the extreme score analysis, Q1 teachers differed significantly

from Q2 teachers in terms of their scores on the professionalism scale, and in terms of the frequency of responses allocated to the 'interaction' category. The Q1 group in both cases, making higher scores. There were no other significant differences between the Q1 and Q2 teachers. There were no significant differences between high and low scorers on the GCT and HFT, apart from the relationship between the sex of the teacher and scores on the HFT, plus the 'fact' that high scorers on the HFT were less likely to allocate priorities to the'pupil' category and more likely to allocate priority to the 'Teaching Framework' category, than low scorers on the HFT. The Biographical variables appeared to have little influence on any of the scores obtained on the cognitive and perceptual tasks. In most cases, males appeared to make the more extreme scores.

Phase Two Results

The first part of this chapter explored the relationship among a large number of variables. The second part of this chapter focusses on the eight teachers, included in the reference group, who were filmed in their own schools taking social studies with their classes. Just under 1000 incidents were coded for the group of eight teachers (the target group). Each incident was coded three times in terms of Target; Function; and Action categories.

The number of incidents per teacher varied greatly, (mean = 124.875; s.d.= 39.574; range 197-69) and this was probably a function of the programme underway at the time of filming. Each teacher was filmed for about 21 minutes, and this suggests, an average of approximately 10 incidents per minute.

The results in this part of the chapter will first of all concentrate on the group of teachers as a whole, and then shift in emphasis to the teachers as individuals. Table 6:10 sets out the frequencies of filmed behaviour noted in each category. In addition, the table shows, the frequencies as percentages of Total Frequencies for each teacher.

Table 6:10

Filmed Teacher Behaviour: Frequencies and Percentages, by Category

Teacher		Target			Function			Action				Total
		I	G	C	C	S	A	I	D	R	S	
103	f	93	-	51	29	81	34	4	24	75	41	144
	%	64.6	-	35.4	20.1	56.3	23.6	2.8	16.6	52.1	28.5	100.0
115	f	72	62	13	41	83	23	3	34	58	52	147
	%	49.0	42.2	8.8	27.9	56.5	15.6	2.0	23.1	39.5	35.4	100.0
117	f	26	11	32	29	32	8	17	25	15	12	69
	%	37.7	15.9	46.4	42.0	46.4	11.6	24.7	36.2	21.7	17.4	100.0
119	f	46	50	8	25	53	26	7	12	63	22	104
	%	44.2	48.1	7.7	24.0	51.0	25.0	6.7	11.5	60.6	21.2	100.0
151	f	43	19	27	35	29	25	8	16	30	35	89
	%	48.3	21.4	30.3	39.3	32.6	28.1	9.0	18.0	33.7	39.3	100.0
153	f	82	10	27	19	67	33	9	12	67	31	119
	%	68.9	8.4	22.7	16.0	56.3	27.7	7.6	10.1	56.3	26.0	100.0
155	f	103	79	15	53	71	73	6	36	110	45	197
	%	52.3	40.1	7.6	26.9	36.0	37.1	3.1	18.3	55.8	22.8	100.0
160	f	75	-	55	10	106	14	9	18	61	42	130
	%	57.7	-	42.3	7.7	81.5	10.5	6.9	13.9	46.9	32.3	100.0
Total		540	231	228	241	522	236	63	177	479	280	999
	%	54.1	23.1	22.8	24.1	52.3	23.6	6.3	17.7	48.0	28.0	100.0

The Target category was divided into three sub-categories- Individual; Group and Class, depending upon the target of the teacher's attention. The Function category was concerned with the raison d'etre of the incident., and accordingly three sub-categories were developed- Control subcategory attracted those incidents whose function was 'control' behaviour in some way. The final subcategory 'Association' was concerned with the affective exchanges between teacher and pupil, whilst the second subcategory was concerned with 'subject-matter'. The Action category is mainly concerned with the teacher's action in the exchange or incident. The teacher may be 'initiating' a new sequence in the class programme; or may be 'directing' a pupil in some way. The teacher could be 'responding' to a pupil, or 'soliciting' information from him.

Using the percentages shown in Table 6:10, the teachers were then ranked, and Spearman Rank Correlation Coefficients were computed for all possible sets of subcategories, as presented in Table 6:11 below. The correlations (Rhos) appear to be in the expected directions. For example, exchanges between the teacher and individual pupils, tend not to be 'controlling' incidents; similarly, teacher-class exchanges tend not to be 'associational' in character , whereas 'controlling' incidents tend to be 'directive' and not 'responsive'. Responses to individuals, appear to be negatively correlated with 'class' as a target; 'control' and 'directing' comments.

Table 6:11

Zero-order Spearman Rank Correlation Coefficients for all Categories of Filmed Teacher Behaviour

Category	Target			Function			Action			
	I	G	C	C	S	A	I	D	R	S
Individual	-	-601	-408	-786	500	119	-333	-548	429	310
Group	-	-	-720	506	-339	375	-220	232	185	-149
Class	-	-	-	024	190	-690	524	167	-643	048
Control	-	-	-	-	-667	143	262	810	-643	-095
Subject	-	-	-	-	-	-667	-381	-333	167	214
Association	-	-	-	-	-	-	-024	-167	405	024
Initiation	-	-	-	-	-	-	-	-024	-357	-238
Directing	-	-	-	-	-	-	-	-	-762	-024
Responding	-	-	-	-	-	-	-	-	-	-310
Soliciting	-	-	-	-	-	-	-	-	-	-

Note- decimals omitted

Critical Values Spearman Rank Correlation Coefficients N = 8
p = .10 rho= 643; p = .05 rho= 738; p = .02 rho = 833; p = .01 rho = 881
(Roscoe, 1975; Table 13)

Spearman Rank Correlation Coefficients were also computed for the eight teachers, between the categories of filmed behaviour, and their rankings on the two cognitive tests, HFT and GCT. Additionally, correlation coefficients were also computed between the filmed teacher categories and the response categories to the three video-tape extracts (question 1 TRCS). These results are shown in Table 6:12. Other variables explored in Phase One of the study were dichotomised where required, and Mann-Whitney were calculated between these variables and the rankings of all

eight teachers on all perceptual tasks. Significant relationships are shown in the schematic diagram- Figure 6:1.

Table 6:12

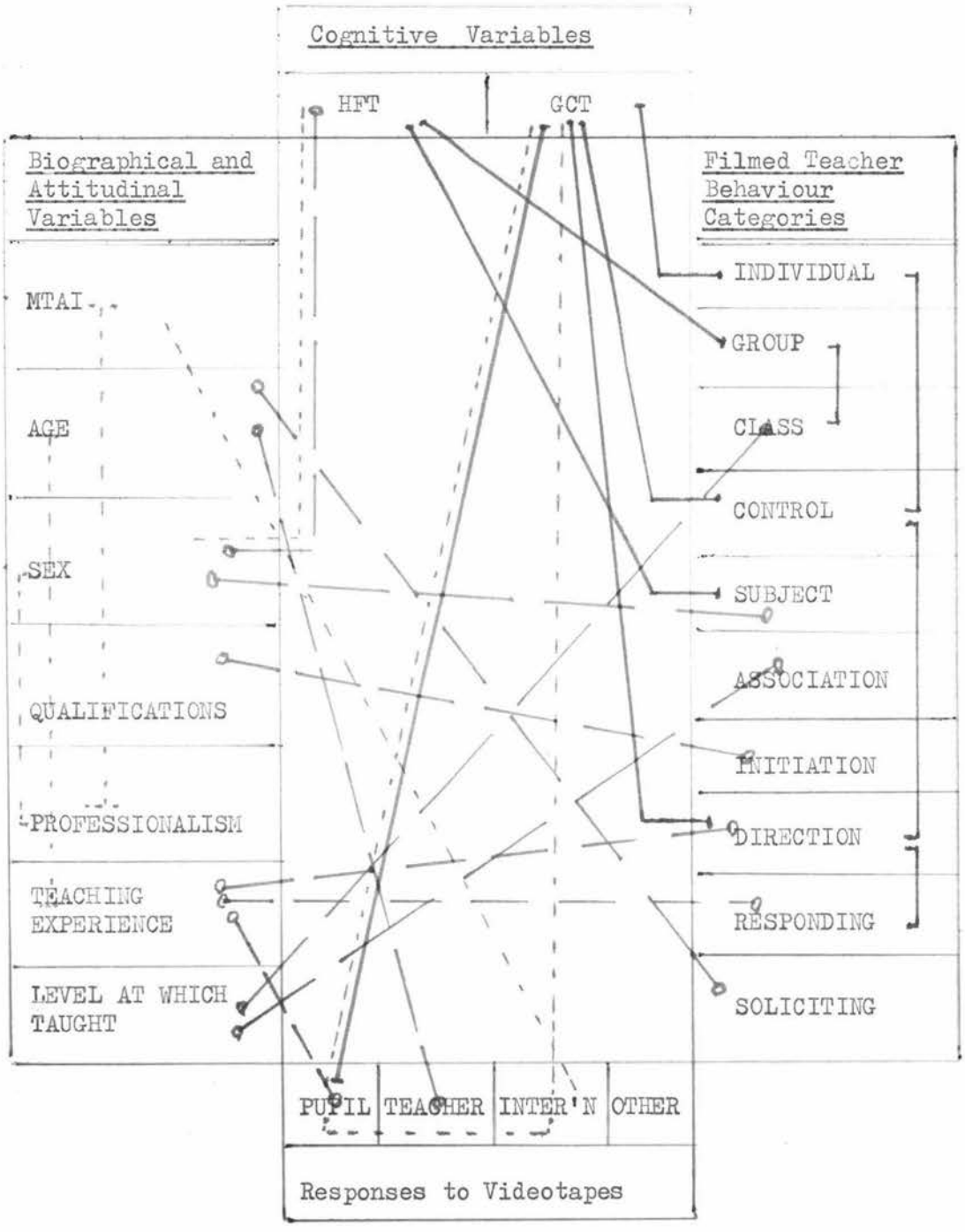
Zero-order Spearman Rank Correlation Coefficients between Filmed Teacher Behaviour Categories and Cognitive and Perceptual Tasks

Variable	Target			Function			Action			
	I	G	C	C	S	A	I	D	R	S
HFT	643	-720	476	-476	714	-571	-381	000	-167	310
GCT	810	-446	-023	-940	714	-131	-238	-797	679	024
Pupils	518	-506	363	-554	542	-327	006	-482	411	-315
Teacher	-054	-464	589	-173	196	-589	161	042	-030	-625
Interaction	696	-542	077	-458	268	077	077	-161	196	-161
Other	-268	631	-589	232	-411	542	-304	-030	161	435

From the above table, it appears that the categories of Filmed Teacher Behaviou are 'independent' of most of the categories developed to cater for the responses to the three video-tape extracts. The only exception appears to be the 'Interaction' category which correlates positively, and almost significantly (using the .05 criterion) with 'individual' targets. The GCT correlates highly with 'individual' targets (positively) and significantly, but negatively with the 'control' and 'directing' categories. These findings seem to fit in with the earlier evidence which suggested that the GCT was concerned with scanning-closure awareness of social relations and interaction. The GCT also correlates highly but not significantly with the 'responding' category, this may be a function of the correlation between the individual and responding categories. The GCT is also correlated highly, positively but not significantly with the 'subject' category. The HFT also correlates with this category, and correlates almost significantly and negatively with the 'group' category. This latter finding may contradict Taylor (1976) finding which suggested that male teachers had a greater awareness of group structure, or it may in fact verify it, for the majority of teachers who were filmed were female! Mean rank for females = 3.8, Males = 5.67 . Therefore, males were likely to work with groups in their classes, as far as this could be ascertained from the films of teacher behaviour.

Figure 6:1

Schematic Diagram showing significant relationships between major variables for the Eight Target Teachers



Reference Group Correlations - - - - - - - - - - - - - -
Spearman Rank Correlations; 0.70 and above ——————
Mann-Whitney U-Test U's with p = .07 and less ——— ——— ———

These results are discussed fully in Chapter 7

The percentages in Table 6:10 were transformed into 'profiles' for each individual teacher, and it may be that the 'profiles' give a much better impression of the similarites among the teachers than, for instance Table 6:10. (see Fig. 6:2)

The 'Target' category tends to give some idea of the structure the teacher placed on the interaction within the classroom, particularly in terms of the programme provided. For example, teachers 103 and 160 did not provide group activities for their classes, and most of the teacher-pupil interaction was on a one-to-one basis, going around the class; or interaction was in terms of teacher to class talk. Teacher 160 did, however, have his class physically broken up into groups, but these were not used for discussion or interaction purposes during the filming.

The opposite was true for teachers 155;115 and 119, who not only had the class physically divided into groups, but also used the groups as vehicles for classroom activities. The teachers in these cases, particularly, 155 and 119, went and joined the groups from time to time, to discuss the topic on hand, or became immersed in group activity. Teacher 115 used the 'withdrawal group' method, setting work for the rest of the class, whilst withdrawing a small group around him, for reading and discussion of various topics.

The low number of total incidents for teachers 117 and 151, (when compared with the mean of 124.875, for the eight teachers as a group) arose from different classroom techniques. Teacher 151 had her pupils perform a number of role plays, which invited little teacher comment or interaction. This was followed later by teacher talk, which raised a number of rhetorical questions but provided little opportunity for teacher-pupil interaction. Teacher 117 devoted a considerable amount of time to 'teacher talk', telling the children a series of facts about prison life; discussing poems, and telling a story. This was in marked contrast to teacher 155, who moved rapidly around her classroom from group to group, interacting with pupils practically unceasingly.

The Function category tended to produce similar profiles for all teachers. In terms of the 'subject' subcategory, teachers 160,155 and 151 tend to deviate from the mean. The male teacher, 160 had a very large number of incidents classified in this category (over 81%) whereas the two female teachers, 151 and 155 had 32.6% and 36% respectively. Teachers 117 and 151 tend to be high in 'controlling' comments or exchanges with their pupils, whereas, 160 tended to be low. It should be noted that these scores are ipsative in nature, and hence a high 'score' in one category , tends to depress the'scores' possible in other categories.

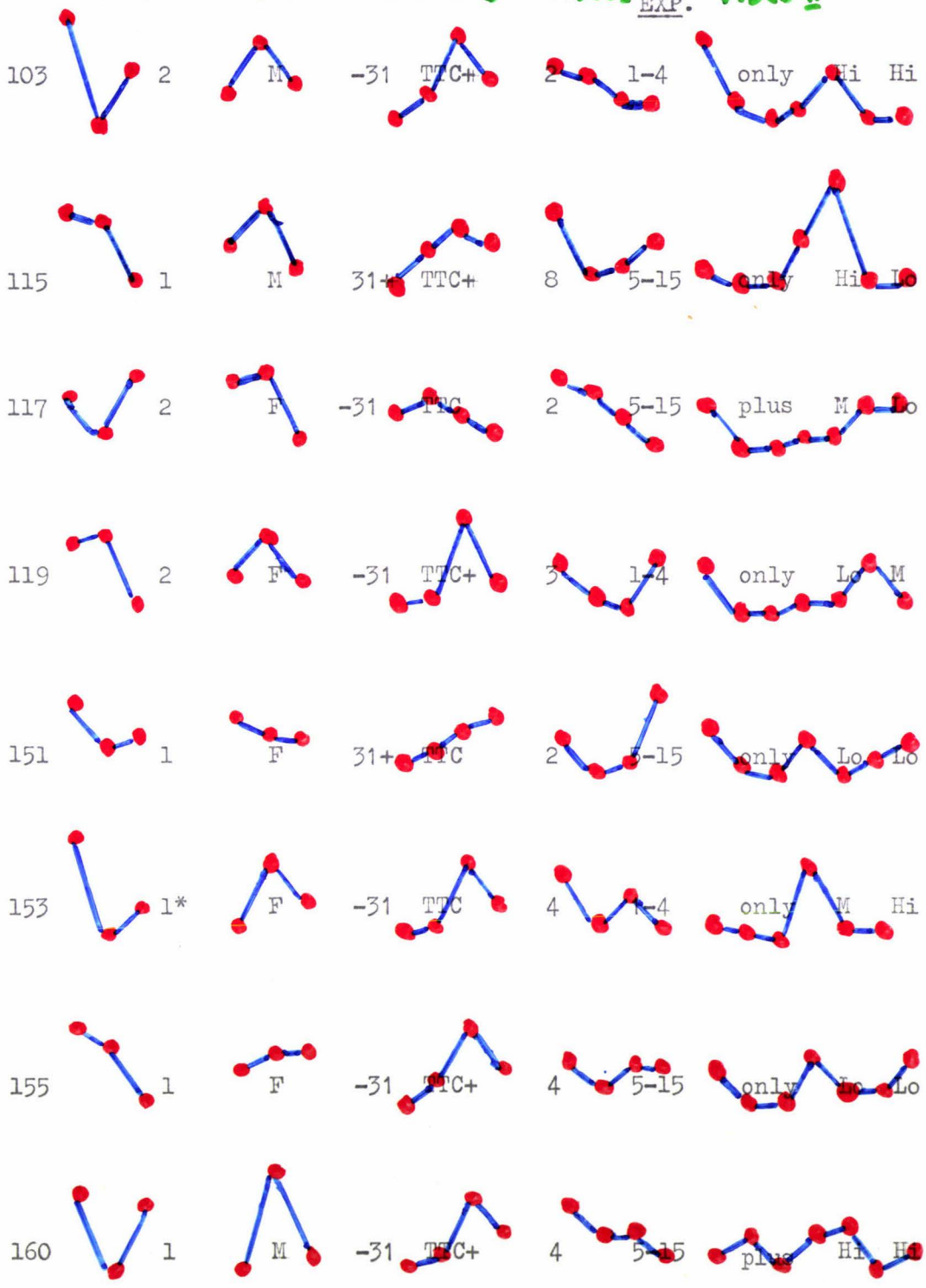
In the Action category, 117 agains seems to deviate from the 'normal' patterning of coded incidents, with over 60% of the incidents in the 'Initiating' and 'Directing' subcategories, suggesting a great deal of control of classroom interaction. Teacher 151 also appears to display a different profile, and the profile for teacher 115 appears to be much flatter than the other teachers.

Figure 6:2 sets out the profiles for the eight teachers, in terms of the 'percentages' from Table 6:10 and the percentages of scores in each of the video-tape categories, for both questions one and two. Biographical and other information are related to this particular figure on page 104.

The final chapter discusses the results of the exploration, making particular reference to the results obtained in Phase Two of the study.

Figure 6:2

Target Teacher Profiles



*actually Other, but placed in the 1 category for this analysis because loads higher in Q1 than Q2.

See chapter seven for a fuller discussion of these categories

CHAPTER 7

DISCUSSION AND CONCLUSIONS

This ex post facto investigation into teacher attentional behaviour was designed primarily to discover whether or not regularities appeared to exist among a number of pre-determined variables for the sample of teachers under study. It was argued that biographical characteristics and teacher attitudes would have a role to play in the determination of teacher attentional behaviour. Furthermore, it was argued that positive correlations would exist among the various measures of attentional behaviour employed. This chapter discusses the major results of the study, and the implications of these results for further research into attention, in general, and teacher attentional behaviour, in particular.

Teacher Attitudes

It was suggested that teacher attitudes to pupils as measured by the Minnesota Teacher Attitude Inventory ought to be reflected in behaviour, including attentional behaviour. In this study, there were only chance associations between the MTAI and the cognitive tests; perceptual tasks and classroom attentional behaviour measures employed in the research. It was found, however, that MTAI Q1 teachers tended to make more responses which were allocated to the 'Interaction' category in the Test for Recall of Complex Stimuli (question 1). This finding, occurred only for the Reference Group of teachers, and the relationship between the MTAI and the 'Interaction' category did not show through with the Target Group of teachers.

Membership of Q-groups was not related to actual classroom attentional behaviour. Similarly, there were only chance relationships between the MTAI Q-group membership and biographical variables encompassed within the Teacher Questionnaire, except that Q1-group teachers tended to be significantly more involved in professional activities than the Q2-group of teachers. This relationship, however, was not manifested with the Target Group of teachers. Yee (1968) has shown that age and years of teaching

profoundly affects attitudes of teachers to students, as measured by the MTAI, yet this was not apparent in this study. Lentz (1965) found that biographical information obtained from student teachers completing the MTAI (eg. age; number of siblings; religious affiliation; education and vocations of parents; and so on.) did not appear to differentiate between upper and lower quartile scorers on the MTAI. A finding that is echoed by this study.

The apparent association between the MTAI and 'professionalism' as measured by the professionalism scale, needs some comment. It may well be that this relationship found at the primary and intermediate school levels, may not be reflected at the secondary, or even tertiary levels of education. This could be a function of the different kinds of training that primary and secondary teachers undergo. It may be, that at the secondary level, that professionalism is more associated with mastery over 'subject matter'. In other words, 'professionalism' as a term, might mean different things to teachers at different levels within the teaching service. To suggest, therefore, that high scorers on the MTAI should score highly on the professionalism measures may be erroneous. The possibility of the generalisation of the relationship found in this study between the MTAI and 'professionalism, past this small sample of teachers may well be hazardous. It could be hypothesised that primary teacher who make high scores on the MTAI would tend to make high scores on the professionalism scale, whereas, professionalism in secondary school teachers would be related to low scores on the MTAI.

The 'Interaction' responses are those concerned with ostensible interaction and comments about the relationships of the actors on the video-tapes. The link between the Interaction category and the MTAI may only be a chance occurrence (McNemar, 1964). However, Nall (1971) has shown that MTAI scores tend to related to classroom climate, and it may be that the relationship between the MTAI and the 'Interaction' category may reflect this, particularly in view of the strong relationship between the GCT and the 'Interaction' category manifested in the factor-analysis. The assumption being that teachers who are aware and sensitive to

to the interactions occurring within their classrooms are more likely to engender positive, harmonious and warm classroom climates. This needs further investigation, however.

Few studies, if any, utilising the Q-factor analytic technique on the MTAI have been reported in the literature..It is a technique which could be used profitably if separation of teachers into 'discrete' groups is required. What meaning can be attached to these groups or clusters of teachers, however, is open to debate. In this study, it was discovered that Q1 and Q2 groups differed significantly in terms of their total scores on the MTAI. What the Q-factor technique does of course, is to bring teachers into groups, whose patterns of responses to the 150 items are similar. The Q-factor technique can be used where small samples of teachers are being tested. It saves considerable trouble and effort in devising factor scales which tend to emanate from the more traditional 'R' analyses. Recent studies by Wakefield (1975; 1976) have used the 'scales' derived from the original Yee and Fruchter study (1971). The applicability of these scales to New Zealand teachers has still, however, to be proved.

Biographical Variables

Sex

Apart from the consistent relationship between the sex of the teacher and scores on the Hidden Figures Test, no other biographical variable had any impact on the two cognitive tests. Male teachers, regardless of the mode of analysis made significantly higher scores on the HFT than female teachers, a finding consonant with the bulk of the research (eg. Witkin et al., 1962). Male teachers also tended to be more 'subject' orientated in their classroom attentional behaviour. The triangular relationship between the sex of the teacher; the HFT and 'subject' is consonant with previous research- male teachers tend to be more 'analytic' (Witkin et al., 1962); analytic individuals tend to be more objective and more involved in 'subject matter' (Klausmeier et al., 1974); male teachers tend to be more concerned with academic achievement (Taylor, 1976). These inter-relationships need further investigation.

Age

In the Phase Two analysis, older teachers tended to make more responses that were 'teacher' orientated than did the younger teachers (±31). The younger teachers, on the other hand, were more prone to 'solicit' information from pupils in their classes. As there were no links between age, and 'soliciting', and the MTAI, it would be difficult to suggest that 'soliciting' behaviour was congruent with positive attitudes (democratic) to the children.

Age and 'years of teaching experience' tend to be related (dichotomised as follows- under five years; five years and over), naturally enough. Yet, whilst teachers with less teaching experience tended to be more 'pupil' orientated, and more 'responsive' to them, and less 'directive' than teachers who had been teaching for more than five years, there were no links between the age of the teacher, and the three variables- 'pupil' 'directing'; 'responding'. This could be a function of the small number of teachers in the Target group. The more probable explanation could well be that the number of years in actual teaching, is a more crucial determiner of teacher attentional behaviour than age by itself. Furthermore, the lack of any relationship between these variables and the MTAI indicates that these various categories of teaching behaviour should not be evaluated in terms of value judgements (eg. good, bad and so on). Therefore, the fact that younger teachers tend to be more 'responsive' to 'pupils' and less'directive' than teachers older in classroom experience, should not be interpreted as suggestive of better teacher-pupil relationships among the less experienced teachers than among the teachers with more service to their credit.

It is interesting that whilst strong relationships exist (for the reference group, at least) between the 'pupil' and 'interaction' categories, years of experience was not related to the 'interaction' category, although links do exist between years of experience and the 'pupil' category.

Level at which taught

The two teachers who had had a wider teaching experience (that is, who had taught at other levels in the education service, in addition to the primary (excluding primers) and intermediate levels) tended to be more concerned with the 'class' as a whole, and less interested in passing the time of day in 'associational' contacts with pupils. This is suggestive, perhaps, of a more formal approach to the class and teaching. Yet, this was not manifested in Q-group membership, (low scorers on the MTAI tend to be more traditional (see Kerlinger 1967) in their approaches to students). There was a high, but not significant relationship between 'class' and 'association' (rho= -.690) which is suggestive of a triangual relationship between these three variables (level at which taught; class and association) which may benefit from further investigation.

Qualifications

Teachers with qualifications in addition to the Trained Teacher's Certificate were significantly less concerned with initiating teaching sequences in the classroom, than teachers with the T.T.C.. No other variables correlated significantly with either the 'initiation' or 'qualification' categories.

Professionalism Scale

The relationship between this scale and the MTAI has been commented upon previously in this chapter. Male teachers tend to be more involved in professional activities than female teachers. That this is so, is hardly surprising, particularly, in the primary service, where the bulk of the teachers are women, many of whom have returned to teaching after bringing up their families. The implications of this relationship, if generalisable to the primary teaching service as a whole, are serious, especially in the light of the growing and increasing rate of'feminisation' of the primary service (Archer, 1976).

The picture emerging from the discussion suggests that the biographical variables tend to be relatively independent of each other, and yet many of the variables, individually, correlate

significantly with classroom attentional behaviour categories, and with response categories to the video-tape extracts. The seeming relative independence of the two cognitive tests from these biographical variables (apart from the sex of the teacher and the HFT) suggest the possibility of the development of some kind of regression model which may be useful in the prediction of attentional behaviour. Ideally, the predictor variables should predict the criterion behaviour reasonably well, yet inter-correlations between the predictor variables should be low. This could well be the next step in any further research in this area.

It appears that biographical variables, therefore, have some role to play in attentional performance, particularly in the classroom. It was not possible with the present data to discover whether or not the sex of the teacher played a role in the distribution of attention between boys and girls. This kind of study would need repeated observations of the teacher in action, in his own classroom, over a period of time.

Cognitive Tests

The marked independence of the HFT and the GCT have been commented upon previously. The relationship between these two tests will be explored later in this section.

HFT

The HFT correlates significantly with the sex of the teacher and with the 'subject' category. Furthermore, the HFT also correlated highly, negatively, but not significantly with the 'group' category. This may be a stylistic tendency, and may affect classroom organisation rather than interpersonal relationships with students. This possible relationship would need to be 'tested' empirically.

GCT

The GCT seemed to play a more significant part in actual teacher attentional behaviour in the classroom, and correlated significantly with major categories of attentional variables. In addition, the GCT correlated positively and significantly

with the 'pupil' category (for both reference and target groups). In the factor analyses, the GCT appeared to give 'meaning' to each of the Factor 1's. In the third analysis, the GCT, together with the 'interaction' and 'pupil' variables, loaded very highly, positively and significantly with Factor 1.

The GCT, whilst it correlated significantly with one of the subcategories, in each of the major categories of classroom attentional behaviour, and with 'pupil' and 'interaction' categories, in the video-tape analysis, it did not correlate with any of the attitudinal or biographical variables. Its very independence from these latter variables may make it more useful in any test battery, than perhaps the HFT.

High scorers on the GCT appear to be concerned the 'pupils' as 'individuals' and not so much concerned with 'controlling' and 'directing' them. High scorers also appear to be sensitive to 'interaction' within the classroom.

The HFT and the GCT have been previously linked with the two levels of attentional processing. The HFT appears to be linked in the research with stimulus-set materials, and with the 'filter' mechanism in the Broadbent model. In other words, individuals high in analytical ability are those who effectively use the filtering mechanism to filter out unwanted, distracting incoming sensory data, hence enabling them to focus and concentrate upon detail. It could be argued that the failure of the HFT to correlate meaningfully with the perceptual tasks and did not emerge in the classroom attentional behaviour, was because the perceptual tasks were essentially 'response-set' material, and classroom behaviour of teachers tends to be 'reactive'. It could well be then that the tasks presented to teachers in this study did not allow for stimulus set processing.

The GCT tends towards the Leibnitzian pole, and is essentially concerned with the 'creative' closure aspects of attentional processing- the bringing together, and making sense out of a disparate field. It has also been suggested that the GCT

measures deeper attentional processing after filtering has occurred. Certainly, the data in this study supports the notion of the GCT being concerned with 'relational' aspects of attention;, in this study, the data is suggestive only of a link between the HFT and the 'objective' (as opposed to relational) and academic achievement.

For many years, Witkin and his associates have argued for a bi-polar continuum of analtycal ability, as measured by a series of tasks, including embedded figures type tests. High scorers on these tests are regarded as being high in analytical ability, and being 'field independent', whereas low scorers on these tasks are regarded as being 'field dependent'. FD persons tend to be warm, interested in relational aspects of life, whereas the FI individuals are those interested in detail; the 'objective' and so on.

The data from this study, however, indicates that maybe a better 'measure' of the FD person may be obtained by utilising the GCT, and that rather than being considered as being bi-polar as Witkin, and his associates suggest, that FI and FD may in fact be orthogonal to each other. The absence of analytical ability (as indicated by low scores on the HFT or EFT) does not surely mean that such individuals are 'more relational' than those who make high scores on such tests!

In fact, it may be that both attentional modes, as measured by the HFT and GCT, are required in everday living, and that the concentration on only one of the skills (analytical) ignores the other very important, perhaps more so, relational and deeper processing skills. Research has indicated that the HFT analytical ability is stable over time, and that even at a very early age, relational skills appear to be related to low HFT scores. The stability of the GCT scores is not known, and it could be that research into this particular test may be invaluable.

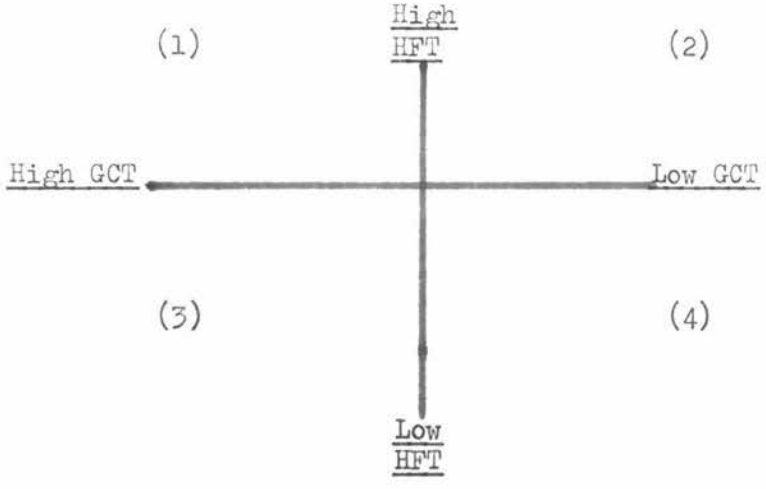
If, in fact, the GCT measures deeper level cognitive processing, then it could be argued that speed of processing

should be linked with intelligence. It seems that there are two ways of using this particular test. If attentional processing is being measured, then the concern is not so much with how quickly the individual arrives at the correct percept, but that he makes any percept at all! As was mentioned previously, it appeared that subjects could make sense out of the disparate blots or they could not. But the test was scored for accuracy of percept not that they made their own sense out of the percept! Further investigations into this area may be fruitful. The test could be made so speeded that in fact, coping with the test becomes a function of intelligence, rather than perhaps attentional processing ability.

The very real possibility that the HFT and the GCT are orthogonal to each other raises a number of implications. What for instance, are the characteristics of those individuals who score highly on both modes, and how are they different from those who score lowly on both modes-

Figure 7:1

Proposed Model of Attentional Style



Similarly, it is interesting to speculate on the characteristics of those who score highly on one mode, and low on the other.

Four sets of relationships are possible (theoretically) in this model (see Fig. 7:1). Presumably cells two and three will tend to resemble Witkin's bi-polar continuum. Those in cell 1 would tend to be efficient in both the focussing skills, and the creative skills. Such people might well be employed as architects, or in management where broad integtative and focussing skills are required. These people would tend to be flexible and have the ability to shift from one mode to another, relatively quickly. Those occupying cell 4 would tend to be at the mercy of their environment, having low focussing ability and low ability to integrate everyday events into any meaningful whole. Another interpretation of cell 4 could be that these people tend to make decisions on relatively little processed information. This kind of investigation is a possibility for the future, particularly, in the light of the development of Nideffer's Test for Attentional and Interpersonal style (Nideffer, 1976).

Implications for Attentional Research

There are a number of implications for research into attention; cognitive style; and teaching behaviour, some of which have been tentatively explored.

Some of the implications of the findings of this study, however, tentative they may be, for the study of attention include the use of the HFT and GCT (jointly) as measures of levels of attentional processing, and 'attentional skill'; the refinement of the Test for Recall of Complex Stimuli as a means of measuring complex attentional behaviour; the need to develop more adequate indices of attentional behaviour, particularly, where 'in situ' research is being considered.

The very orthogonality of the HFT and GCT may be suggestive of differing levels of attentional processing. From a theoretical

point of view, the links between these two levels need further exploration and elaboration. To what extent, for example, does learning affect these levels of processing? Barham and Boersma (1975) suggest that teachers may be 'conditioned' to respond to certain classes of stimuli, within the classroom and ignore others. Presumably this kind of learning affects the filtering through to further processing of some stimuli and not others. In other words, what kind of stimuli are allowed to decay in short-term-memory? This process could well be examined through the use of a test similar, if not identical with the Test for Recall of Complex Stimuli used in this study. A further area of research is the relationship between attitudes, which are learned predispositions to respond to certain stimuli and not to others, and the filtering process. Are attitudes more likely to affect pre-filtering processes, or post-filtering, more deeper levels of attentional processing? A further area of research is the relationship between personality variables and the cognitive processes of attention. Wakefield (1975; 1976) is making tentative explorations in this area. His work may be important in further understanding how certain stimuli are selected to pass through the filter, and which are allowed to decay in the short-term-memory store.

It is also argued, that simplistic attentional tasks may be of very little help in understanding the complex area of attention. The Test for the Recall of Complex Stimuli, or its derivative may be helpful. In this study, no attempt was made to assess the veridicality of teacher perceptions. It may be that with suitable extracts of selected film, that not only may norms be developed, and more objective scoring methods evolved, but also it may enable investigation of attentional behaviour in 'social' as opposed to 'non-social' situations.

There is still a great need for the development of adequate indices of attentional behaviour. This study has shown that the 'construct' is multi-dimensional, and that simplistic approaches to it, are somewhat unrealistic. This suggests the possibility of some kind of regression model, perhaps, which would encompass a

number of disparate variables, provided of course, that the criterion behaviour has been identified. This criterion, as far as teachers are concerned, could well be the 'verbal' behaviour of teachers.

Implications for Teaching

Originally, it was suggested that attitudes and biographical characteristics of teachers may play a part in the structuring of their attentional behaviours. The MTAI, on the data presented appears to play little if any active role in structuring teacher attentional behaviour of any kind. The biographical variables appeared to play a role in actual classroom behaviours but not in terms of performance on the cognitive tests or the perceptual tasks. Teachers in this study tended to be 'reactive' in the main to classroom events. There is also a strong suggestion that the GCT may be related to an awareness of relationships within the classroom. It may be that if this finding is substantiated in other studies, that selection of teachers for particular tasks within the teaching service may be assisted by the use of this test. The MTAI should not be used for this purpose.

It appears that the ordering of the presage variables in the Dunkin and Biddle (1974) maybe somewhat astray. Teacher 'properties' did not have salience in this study as factors affecting teacher attentional behaviour, whereas actual length of teaching experience appeared to play a significant role in the structuring of attention. This raises questions about the timing and length of 'practicum' in teacher training programmes, and indirectly the efficacy of such educational and professional training.

This study did not investigate the properties of the teacher that had salience for the pupil, so the suggestions about the biographical characteristics of the teacher structuring attention must be treated cautiously because attention in terms of its operational definition used in this study, is essentially a two way process. Part of the structuring, if not the major part, of teacher attention was a function of pupil behaviour.

This exploratory study undertook to investigate teacher attentional behaviour utilising a number of approaches to the construct that were either theoretically or methodologically, not logically, however, independent of each other (ie. paper and pencil cognitive tests; perceptual tasks; and actual measures of teacher attentional behaviour). That substantial correlations emerged in the analyses of the data, give testimony to the multi-dimensionality of the construct 'attention'. The relative 'failure' of the perceptual tasks to correlate significantly with actual teacher 'in situ' attentional behaviour could be because of the memory component in the perceptual tasks. Similarly, the inability of the HFT to correlate significantly with the other attentional tasks could be a function of the 'material-set' (ie, tasks being of essentially response-set material and not stimulus-set material). This latter contention suggests that maybe much of the high correlations obtained in the research between embedded type tasks and 'academic' tasks may have an in-built success factor, both, may in fact be measuring stimulus-set material! Similarly, the high correlations obtained in this study between the GCT and various 'attentional' tasks could be a function of the fact that both are measuring response-set material. This suggests furthermore, the need for some kind of attentional-task-analysis. The lack of any substantial relationship between attitudes as measured by the MTAI, and various attentional tasks, whilst opening up areas of future research, is perhaps not surprising. There are indirect links evident in this study between the attitudinal and perceptual measures. As was mentioned earlier in the study, it may be fruitful to investigate the events and incidents in the classroom that teachers do not attend to, or in some cases, consciously ignore. This approach may assist in the further clarification of the 'attentional' construct. The suggestion by Nideffer (1976) that individuals attend to internal stimuli (thoughts and feelings) as well as external stimuli, may need to be taken into account in any further attempts to measure teacher attentional behaviour.

The time, however, may not yet be ripe for the development of theories of attention to complex stimuli, yet the importance of understanding what teachers attend to, in classroom situations; what social workers and others attend to in group treatment situations; or others (management; unions) who need to understand complex social interactions, may in fact, accelerate research into this important topic.

APPENDIX 1

Instruments

1..Teacher Questionnaire Green printed booklet (10 pages)
2..Gestalt Completion Test Part 2 (3 pages)
3..Hidden Patterns Test Part 2 (3 pages)
4..Minnesota Teacher Attitude Inventory (5 pages)
5..Answer Sheet for MTAI (printed green sheet) (1 page)
6..Hidden Figures Test (3 pages)
7..Hidden Patterns Test Part 1 (3 pages)
8..Gestalt Completion Test Part 1 (3 pages)
9..Identical Pictures Test Part 1 (3 pages)
10..Test for Recall of Complex Stimuli (7 pages)

printed alternatively on yellow and white paper

Order of Presentation

2,3 completed at school

1,4-5, completed at home or at school

6,7,8,9,10 completed approximately 6 months after completion parts 1-5.

C O N F I D E N T I A L

135

TEACHER - PUPIL INTERACTION PROJECT

Teacher Questionnaire

Researcher.....Doug. MacLean

Research Supervisor.....Eric Archer,
Senior Lecturer,
Department of Education,
Massey University,
Palmerston North.

Teacher - Pupil Interaction Project

Over the past decade, there has been an ever growing amount of class-room based research, and in some respects, New Zealand has been in the forefront of this movement, particularly in the video-taping of teachers and students in classroom situations. This study which will hopefully, lead to the completion of my MA thesis, is focussed on pupils and on how teachers view and react to them.

There are, basically, two parts to the study. Part one, consists in teachers completing a short questionnaire: responding to a well known teacher attitude inventory; the identifying of certain children in their classrooms, and responding to three video-tapes, which will be presented later on. Part two, will involve the co-operation of a limited number of teachers only, will consist in their being filmed in action in their classrooms. Hopefully, as we are focussing upon teachers and pupils, we may be able to bring into the classrooms concerned, two cameras, one of which will be on the teacher, and the other focussed on the pupils.

All documents, information and data received will be kept strictly confidential, and I similarly require the same undertaking from you. For instance, you may happen to identify a student, teacher, parent on the tapes presented to you, please keep this information confidential, even though in all cases permission to use the tapes for research purposes has been granted.

Those teachers who agree to participating in part two of the project and who are selected to be video-taped in their classrooms, will be given the opportunity of seeing themselves in action on a playback of the tapes. The tapes will not be made available to others and will be erased at the completion of the study.

All answers will be regarded as confidential and will be associated with a code number during data processing. Your name and address will be filed separately and used only to make contact with you later, for part two of the project.

YOU ARE NOT BEING EVALUATED AS A TEACHER

Please complete the section below, and then detach this page from all other papers.

Name of Respondent.....

School.....

Room Number.....

Teacher - Pupil Interaction Project Code number.135.....

Teacher Questionnaire

Instructions

Most questions can be answered by placing a CROSS (X) in the appropriate box given opposite a question. For example, if you are female, you would answer the first question as follows-

1.. My Sex is..

Male	
Female	X

Some questions ask for an opinion- if the alternatives given do not exactly respond to your position, circle, the number of the answer which is closest to your opinion.

There is space between the questions- use this to elaborate your answers, if you would like to do this. Furthermore, if the questions do not really allow you to say what you really think, please make a statement in your own words. Please be completely frank and honest in answering questions, which will treated in complete confidence.

1...

My sex is...

Male	
Female	

2...

My age last birthday was..

Under 21	
21 - 30	
31 - 40	
41 - 50	
51 - 60	
61 and over	

.....

3...

I trained as a Primary Teacher at

.....Teachers' College...

North Shore	
Auckland	
Ardmore	
Hamilton	
Palmerston North	
Wellington	
Christchurch	
Dunedin	
+Other	
Not Formally Trained	

* If Other, please give details

.....

4...

The training I received as a teacher lasted for...

1 Year	
2 Years	
3 Years	
More than 3 Years	
Not Applicable	
+ Other	

+ If Other, please give details

.....

.....

5...

I have been a teacher for..

Under 1 year	
1 - 4 years	
5 - 15 years	
16 - 30 years	
Over 30 years	

Note - Do not include years of training, but do include all teaching service whether or not that was continuous or broken, regardless of whether such service was in Primary, Intermediate, Secondary Schools, in the services or at the Tertiary level.

6...

I consider myself to be..

Pakeha	
Maori	
Both above but mainly Pakeha	
Both above but mainly Maori	
Polynesian other than Maori	
+Other	

+If Other please give details

.....

7...

In addition to (or instead of) my teacher's certificate, I have the following qualifications.....

.....

.....

.....

.....

Please include partial qualifications eg units or papers towards a degree, or professional qualification. Include other kinds of training if any, eg nursing, police, social work, secretarial etc.

8...

I obtained the above qualifications..

Prior to entering Teaching	
After entering teaching	
Prior to and after entering teaching	
I am still studying	
Not Applicable	

9...

During my teaching career, I have taught...

In only 1 School	
In two schools	
In three schools	
In more than three schools	
Outside of Hawkes Bay	
Overseas	
In the Armed Forces	
In the Primers	
At the secondary level	
At the Tertiary level	

10..

Would you please list any experiences which you believe have markedly affected you in your personal development and in your development as a teacher.
Examples could be travel overseas, war service, work experiences prior to entry into teaching etc.

.....

.....

.....

11...

I hold a position of responsibility in this school, which is recognised for salary purposes..

Yes	
No	
Don't Know	

12...

I hold position(s) of responsibility in this school, which is (are) not recognised for salary purposes- eg team coach, librarian, club leader, etc...

I hold 1 position of responsibility	
I hold two such positions	
I hold more than two such positions	
I hold no such positions	

13...

Tick all Boxes which apply to you..

I am a member of a teacher professional group, eg NZEI, PPTA

I am a believer in IN-service training

I try and keep up with professional reading

I have attended an in-service course in the last two years

I subscribe to professional educational (etc) journals, other than Education, the Gazette or journal of your professional association.

I attend meetings of my professional body regularly

I hold an executive position in my professional body

I have held such positions in the past

I have presented papers, published articles on educational matters..(eg to in-service courses, etc. Am used as a resource person for courses etc.)

.....

14..Some commentators have made the following statements about teaching. If you strongly agree with the statement please circle 1; If you agree, circle 2; please circle 3 if you are neutral, and circle 4 if you disagree with the statement, and circle 5 if you strongly disagree with the statement.

A...School teachers should be required to work a 40 hour week, at school.	1	2	3	4	5
B...Teaching is an easy job - it is money for jam.	1	2	3	4	5
C...All teachers should be required to work in industry, commerce, etc., prior to their entering teaching.	1	2	3	4	5
D...The work strains in teaching are no greater or lesser, than the work strains in other occupations.	1	2	3	4	5
E...Teachers should be able to transfer from one area of teaching to another without penalty.	1	2	3	4	5
F...Principals should only hold their position for a maximum of ten years.	1	2	3	4	5
G...Children should not be compelled to go on to Secondary School, if they (or parents) do not wish it.	1	2	3	4	5
H...All children should at least complete their Form 2 year, before being allowed to leave School.	1	2	3	4	5
I...Truancy should be a matter for the Courts if it persists.	1	2	3	4	5
J...Intermediate Schooling is a mistake,pupils should instead go to Form 1 - 7 schools	1	2	3	4	5
K...Intermediate Schools should not have been created- Primary Schools should not have been de-capitated.	1	2	3	4	5
L...Inspectors should act in an advisory role only.	1	2	3	4	5
M...Intermediate Schools should have their own full-time counsellor/social worker/visiting teacher.	1	2	3	4	5
N...Intermediate Schools are a good idea and they should be expanded in numbers	1	2	3	4	5
O...Teachers should be entitled to sabbatical leave (on full pay) after say 10 years teaching.	1	2	3	4	5
P...In-service training courses should be held only during the school holidays	1	2	3	4	5

.....

Just as doctors and other professionals, whilst still giving their patients or clients sympathetic and professional care and treatment, inevitably find some more congenial than others, so do teachers inevitably find some of their pupils more congenial than others.

If you could keep three students in your class for another year, for the sheer joy of having them, whom would you pick? (Please print)

1st Choice.....

2nd Choice.....

3rd Choice.....

(please indicate your room number.....)

If a parent were to drop in to see you un-announced for a discussion of their child, which three students would you least be prepared to talk about?

1..Name of child least prepared to discuss.....

2..Name of next child least prepared to discuss..... .....

3..Name of next child least prepared to discuss.....

If you could devote all your attention to three children in your class who concern you the most, whom would you pick?

1..Name of child most concerned about.....

2..Name of child next most concerned about.....

3..Name of child next most concerned about.....

If your class were to be reduced by three children, whom would you be most relieved to see removed?

1..Name of child you would be most relieved to see removed.....

2..Name of child you would next most like to see removed.....

3..Name of child you would next most like to see removed.....

.....

5 Name one student in any other class, you would like to have in your class for the sheer joy of it.

Name.....Class Room No.....

6 Name one student in any other class, you would be unprepared to discuss with their parent if they happened to pop in, and you were in charge of that class in the teacher's absence.

Name.....Class Room No.....

7 Name one student in any other class, whom you are most concerned about, and to whom you would devote all your attention, if you could.

Name.....Class Room No.....

8 Name one student in any other class, you would most least like in your class.

Name.....Class Room No..... .....

If you are selected, would you be prepared to have video-tape cameras in your class room to record teacher-pupil interaction.

I would be prepared to be video-taped ☐

I would prefer not to be video-taped ☐

Thank you for participation in this project to date. Would you please complete the Minnesota Teacher Attitude Inventory as quickly as possible. The answer sheet is attached. Please read the directions carefully, and when you think you have understood them proceed as quickly as possible through the inventory.

Thanks also to Principals for their support, to Arthur Black, and to the Department of Education for their permission to enter schools. Those contributing to the research will be provided with a copy of the results.

Greg. MacLean

Name: _____ 182

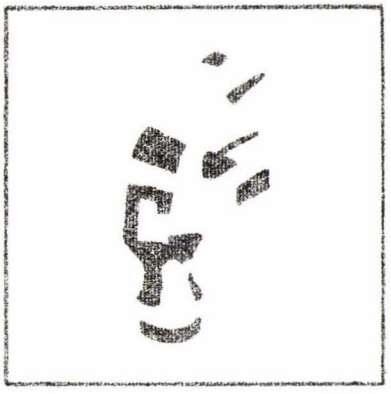
GESTALT COMPLETION TEST — Cs-1

This is a test of your ability to perceive a whole picture even though it is not completely drawn. You are to use your imagination to fill in the missing parts.

Look at each incomplete picture and try to see what it is. Write on the line beneath it a word or a few words telling what the picture is. You need not describe it in detail; just name the picture or its important parts.

Try the sample pictures below.

A _____



B _____

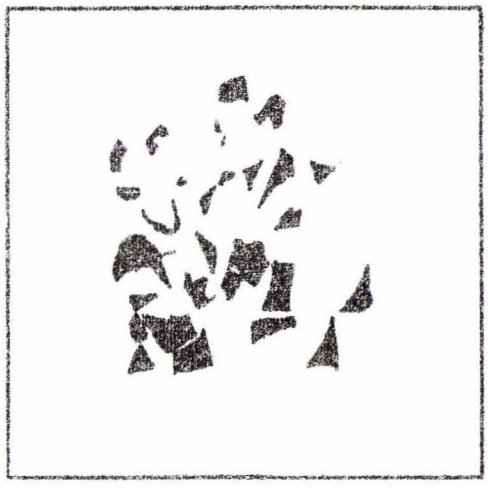
Picture A is a flag and picture B is a hammer head.

Your score on this test will be the number of pictures identified correctly. Even if you are not sure of the correct identification, it will be to your advantage to guess. Work as rapidly as you can without sacrificing accuracy.

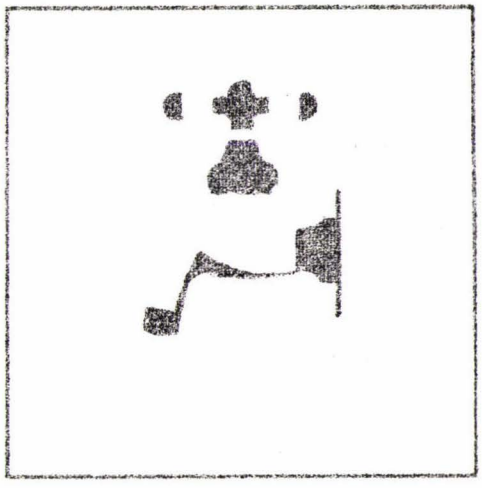
You will have 3 minutes for each of the two parts of this test. Each part has two pages. When you have finished Part 1 (pages 2 and 3), STOP. Please do not go on to Part 2 until you are asked to do so.

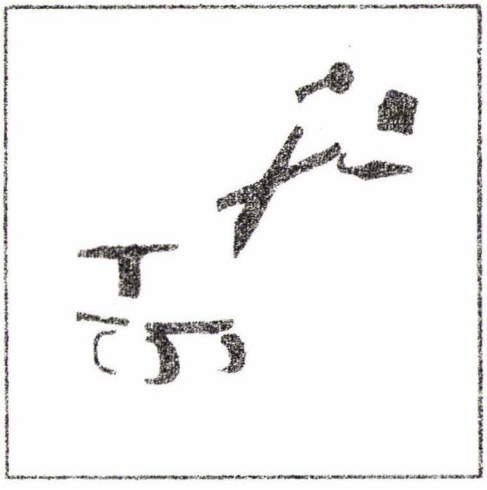
DO NOT TURN THIS PAGE UNTIL ASKED TO DO SO.

Part 2 (3 minutes)

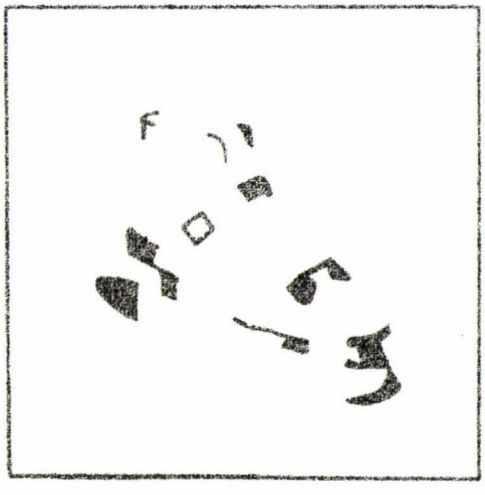


12

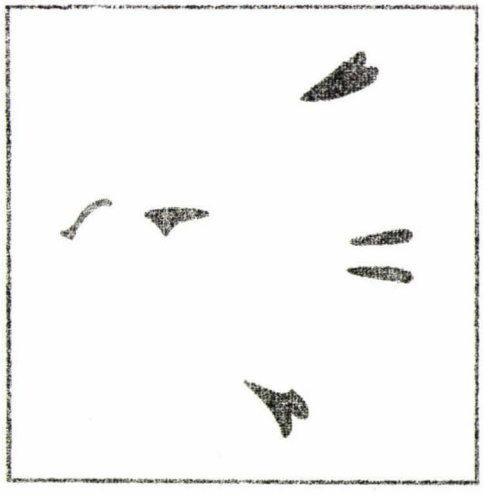




14

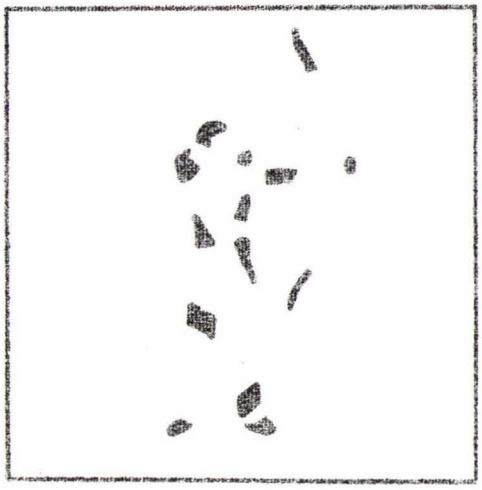


16



GO ON TO THE NEXT PAGE.

Part 2 (continued)



17_____

18_____

19_____

20_____

DO NOT GO BACK TO PART 1 AND

DO NOT GO ON TO ANY OTHER TEST UNTIL ASKED TO DO SO.

STOP.

Name: _____

HIDDEN PATTERNS TEST — CF-2

How quickly can you recognize a figure that is hidden among other lines? This test contains many rows of patterns. In each pattern you are to look for the model shown below:

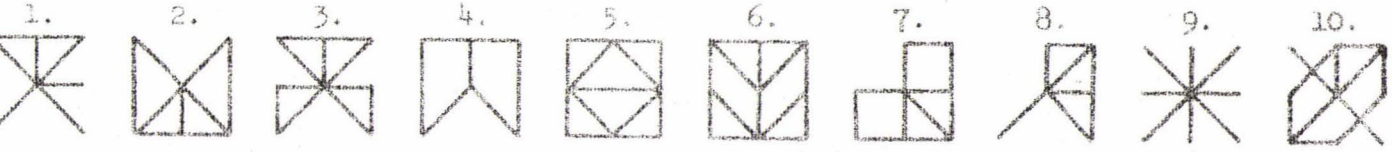
The model must always be in this position, not on its side or upside down.

In the next row, when the model appears, it is shown by heavy lines:

( ) (X) ( ) ( ) (X) ( ) ( )

Your task will be to place an X in the space below each pattern in which the model appears. Now, try this row:

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.



( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

You should have marked patterns 1, 3, 4, 8, and 10, because they contain the model.

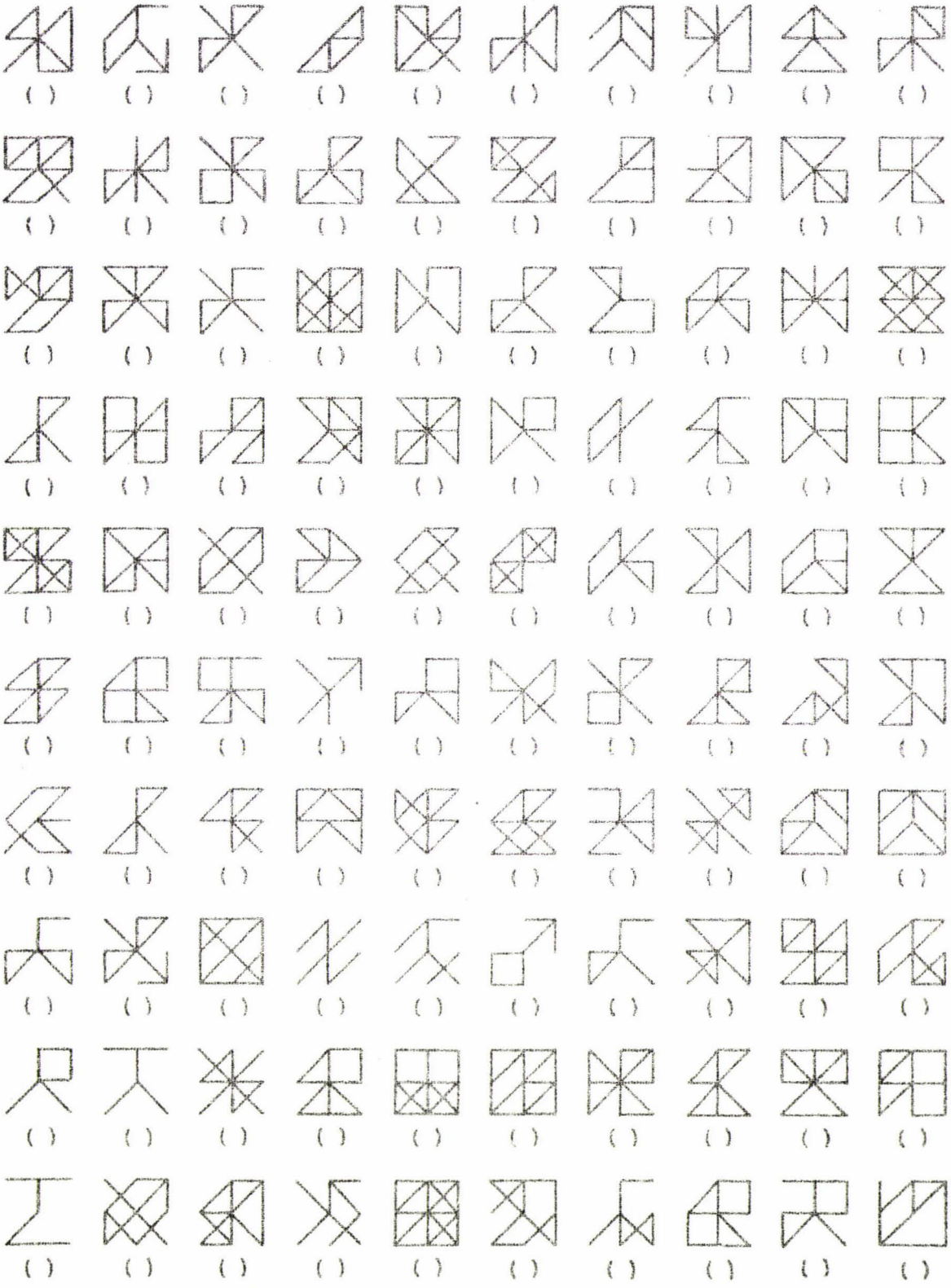
Your score on this test will be the number marked correctly minus the number marked incorrectly. Work as quickly as you can without sacrificing accuracy.

You will have 2 minutes for each of the two parts of this test. Each part has two pages. When you have finished Part 1, STOP. Please do not go on to Part 2 until you are asked to do so.

DO NOT TURN THIS PAGE UNTIL ASKED TO DO SO.

Model:

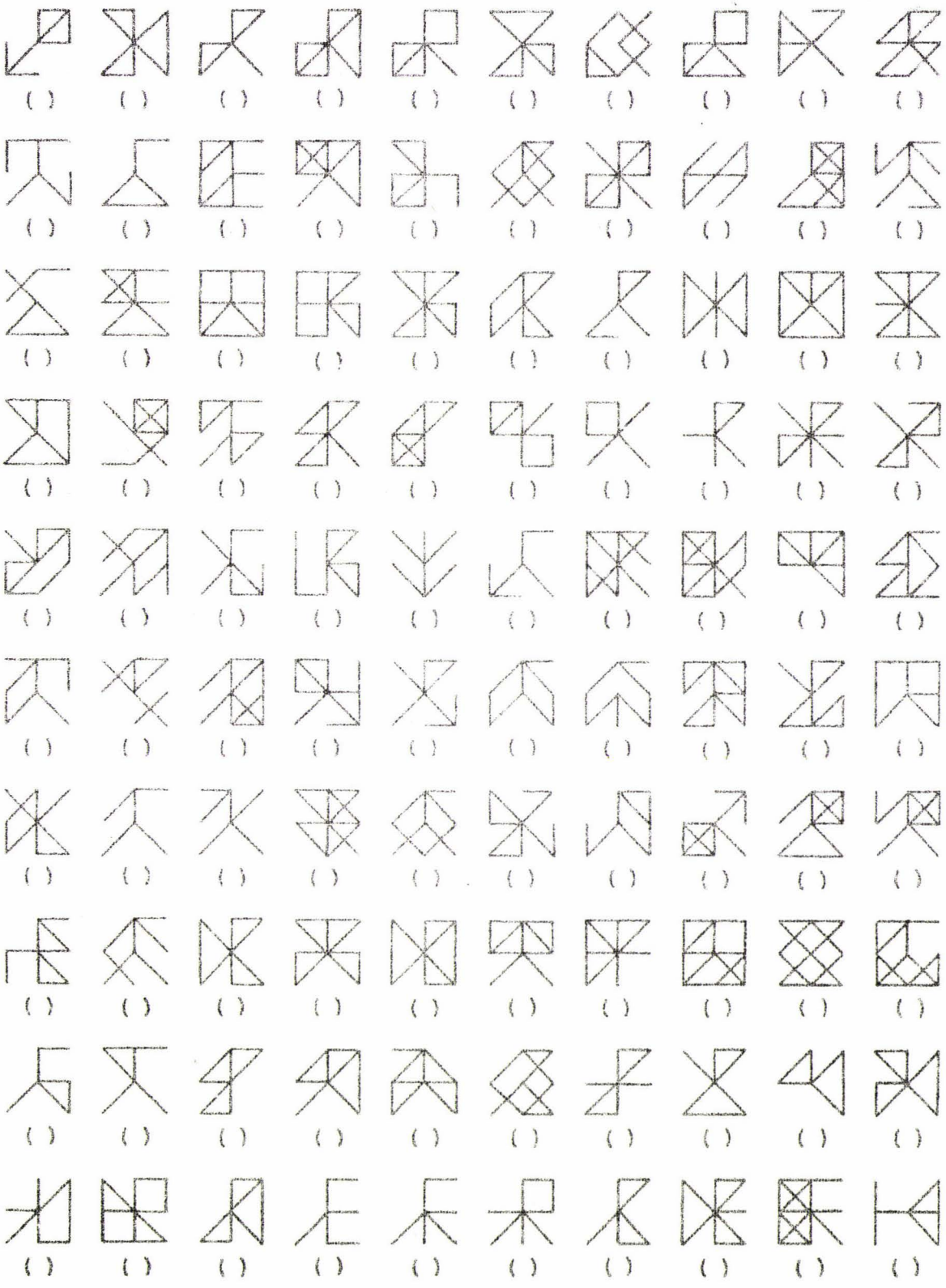
Part 2 (2 minutes)



GO ON TO THE NEXT PAGE.

Model: 

Part 2 (continued)



DO NOT GO BACK TO PART 1 AND

DO NOT GO ON TO ANY OTHER TEST UNTIL ASKED TO DO SO.

STOP.

DO NOT OPEN UNTIL TOLD TO DO SO

MINNESOTA TEACHER ATTITUDE INVENTORY

Form A

WALTER W. COOK
University of Minnesota

CARROLL H. LEEDS
Furman University

ROBERT CALLIS
University of Missouri

DIRECTIONS

This inventory consists of 150 statements designed to sample opinions about teacher-pupil relations. There is considerable disagreement as to what these relations should be; therefore, there are no right or wrong answers. What is wanted is your own individual feeling about the statements. Read each statement and decide how YOU feel about it. Then mark your answer on the space provided on the answer sheet. Do not make any marks on this booklet.

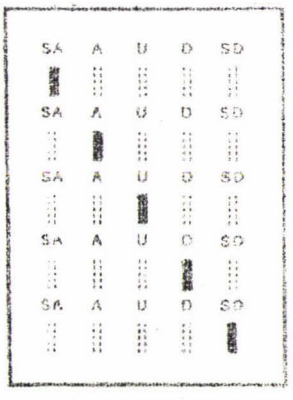
If you **strongly agree**, blacken space under "SA" .....

If you **agree**, blacken space under "A" .....

If you are **undecided** or **uncertain**, blacken space under "U" .....

If you **disagree**, blacken space under "D" .....

If you **strongly disagree**, blacken space under "SD" .....



Think in terms of the general situation rather than specific ones. There is no time limit, but work as rapidly as you can. PLEASE RESPOND TO EVERY ITEM.

The inventory contained in this booklet has been designed for use with answer forms published or authorized by The Psychological Corporation. If other answer forms are used, The Psychological Corporation takes no responsibility for the meaningfulness of scores.

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70-198TB

SA—Strongly agree
A—Agree

U—Undecided
or uncertain

D—Disagree
SD—Strongly disagree.

31. Some children ask too many questions.

32. A pupil should not be required to stand when reciting.

33. The teacher should not be expected to manage a child if the latter's parents are unable to do so.

34. A teacher should never acknowledge his ignorance of a topic in the presence of his pupils.

35. Discipline in the modern school is not as strict as it should be.

36. Most pupils lack productive imagination.

37. Standards of work should vary with the pupil.

38. The majority of children take their responsibilities seriously.

39. To maintain good discipline in the classroom a teacher needs to be "hard-boiled."

40. Success is more motivating than failure.

41. Imaginative tales demand the same punishment as lying.

42. Every pupil in the sixth grade should have sixth grade reading ability.

43. A good motivating device is the critical comparison of a pupil's work with that of other pupils.

44. It is better for a child to be bashful than to be "boy or girl crazy."

45. Course grades should never be lowered as punishment.

46. More "old-fashioned whippings" are needed today.

47. The child must learn that "teacher knows best."

48. Increased freedom in the classroom creates confusion.

49. A teacher should not be expected to be sympathetic toward truants.

50. Teachers should exercise more authority over their pupils than they do.

51. Discipline problems are the teacher's greatest worry.

52. The low achiever probably is not working hard enough and applying himself.

53. There is too much emphasis on grading.

54. Most children lack common courtesy toward adults.

55. Aggressive children are the greatest problems.

56. At times it is necessary that the whole class suffer when the teacher is unable to identify the culprit.

57. Many teachers are not severe enough in their dealings with pupils.

58. Children "should be seen and not heard."

59. A teacher should always have at least a few failures.

60. It is easier to correct discipline problems than it is to prevent them.

GO ON TO THE NEXT PAGE

SA—Strongly agree
A—Agree

U—Undecided
or uncertain

D—Disagree
SD—Strongly disagree

61. Children are usually too sociable in the classroom.

62. Most pupils are resourceful when left on their own.

63. Too much nonsense goes on in many classrooms these days.

64. The school is often to blame in cases of truancy.

65. Children are too carefree.

66. Pupils who fail to prepare their lessons daily should be kept after school to make this preparation.

67. Pupils who are foreigners usually make the teacher's task more unpleasant.

68. Most children would like to use good English.

69. Assigning additional school work is often an effective means of punishment.

70. Dishonesty as found in cheating is probably one of the most serious of moral offenses.

71. Children should be allowed more freedom in their execution of learning activities.

72. Pupils must learn to respect teachers if for no other reason than that they are teachers.

73. Children need not always understand the reasons for social conduct.

74. Pupils usually are not qualified to select their own topics for themes and reports.

75. No child should rebel against authority.

76. There is too much leniency today in the handling of children.

77. Difficult disciplinary problems are seldom the fault of the teacher.

78. The whims and impulsive desires of children are usually worthy of attention.

79. Children usually have a hard time following instructions.

80. Children nowadays are allowed too much freedom in school.

81. All children should start to read by the age of seven.

82. Universal promotion of pupils lowers achievement standards.

83. Children are unable to reason adequately.

84. A teacher should not tolerate use of slang expressions by his pupils.

85. The child who misbehaves should be made to feel guilty and ashamed of himself.

86. If a child wants to speak or to leave his seat during the class period, he should always get permission from the teacher.

87. Pupils should not respect teachers any more than any other adults.

88. Throwing of chalk and erasers should always demand severe punishment.

89. Teachers who are liked best probably have a better understanding of their pupils.

90. Most pupils try to make things easier for the teacher.

GO ON TO THE NEXT PAGE

SA—Strongly agree
A—Agree

U—Undecided
or uncertain

D—Disagree
SD—Strongly disagree

91. Most teachers do not give sufficient explanation in their teaching.

92. There are too many activities lacking in academic respectability that are being introduced into the curriculum of the modern school.

93. Children should be given more freedom in the classroom than they usually get.

94. Most pupils are unnecessarily thoughtless relative to the teacher's wishes.

95. Children should not expect talking privileges when adults wish to speak.

96. Pupils are usually slow to "catch on" to new material.

97. Teachers are responsible for knowing the home conditions of every one of their pupils.

98. Pupils can be very boring at times.

99. Children have no business asking questions about sex.

100. Children must be told exactly what to do and how to do it.

101. Most pupils are considerate of their teachers.

102. Whispering should not be tolerated.

103. Shy pupils especially should be required to stand when reciting.

104. Teachers should consider problems of conduct more seriously than they do.

105. A teacher should never leave the class to its own management.

106. A teacher should not be expected to do more work than he is paid for.

107. There is nothing that can be more irritating than some pupils.

108. "Lack of application" is probably one of the most frequent causes for failure.

109. Young people nowadays are too frivolous.

110. As a rule teachers are too lenient with their pupils.

111. Slow pupils certainly try one's patience.

112. Grading is of value because of the competition element.

113. Pupils like to annoy the teacher.

114. Children usually will not think for themselves.

115. Classroom rules and regulations must be considered inviolable.

116. Most pupils have too easy a time of it and do not learn to do real work.

117. Children are so likeable that their shortcomings can usually be overlooked.

118. A pupil found writing obscene notes should be severely punished.

119. A teacher seldom finds children really enjoyable.

120. There is usually one best way to do school work which all pupils should follow.

GO ON TO THE NEXT PAGE

SA—Strongly agree
A—Agree

U—Undecided
or uncertain

D—Disagree
SD—Strongly disagree

121. It isn't practicable to base school work upon children's interests.

122. It is difficult to understand why some children want to come to school so early in the morning before opening time.

123. Children that cannot meet the school standards should be dropped.

124. Children are usually too inquisitive.

125. It is sometimes necessary to break promises made to children.

126. Children today are given too much freedom.

127. One should be able to get along with almost any child.

128. Children are not mature enough to make their own decisions.

129. A child who bites his nails needs to be shamed.

130. Children will think for themselves if permitted.

131. There is no excuse for the extreme sensitivity of some children.

132. Children just cannot be trusted.

133. Children should be given reasons for the restrictions placed upon them.

134. Most pupils are not interested in learning.

135. It is usually the uninteresting and difficult subjects that will do the pupil the most good.

136. A pupil should always be fully aware of what is expected of him.

137. There is too much intermingling of the sexes in extra-curricular activities.

138. The child who stutters should be given the opportunity to recite oftener.

139. The teacher should disregard the complaints of the child who constantly talks about imaginary illnesses.

140. Teachers probably over-emphasize the seriousness of such pupil behavior as the writing of obscene notes.

141. Teachers should not expect pupils to like them.

142. Children act more civilized than do many adults.

143. Aggressive children require the most attention.

144. Teachers can be in the wrong as well as pupils.

145. Young people today are just as good as those of the past generation.

146. Keeping discipline is not the problem that many teachers claim it to be.

147. A pupil has the right to disagree openly with his teachers.

148. Most pupil misbehavior is done to annoy the teacher.

149. One should not expect pupils to enjoy school.

150. In pupil appraisal effort should not be distinguished from scholarship.

THE PSYCHOLOGICAL CORPORATION

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DATE _____

MALE ____ FEMALE ____

COLLEGE AND CLASS OR SCHOOL AND POSITION

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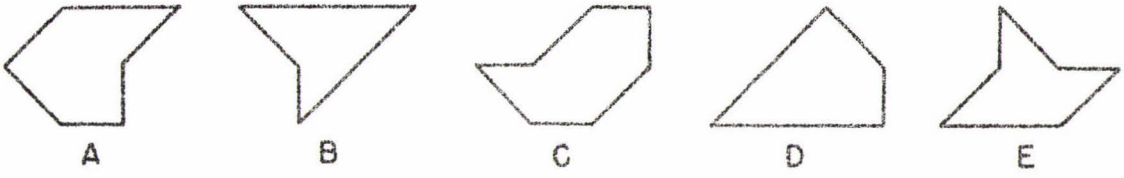
Name: _____ 188

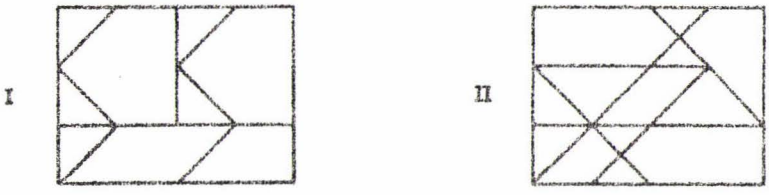
HIDDEN FIGURES TEST — Cf-1

This is a test of your ability to tell which one of five simple figures can be found in a more complex pattern. At the top of each page in this test are five simple figures lettered A, B, C, D, and E. Beneath each row of figures is a page of patterns. Each pattern has a row of letters beneath it. Indicate your answer by putting an X through the letter of the figure which you find in the pattern.

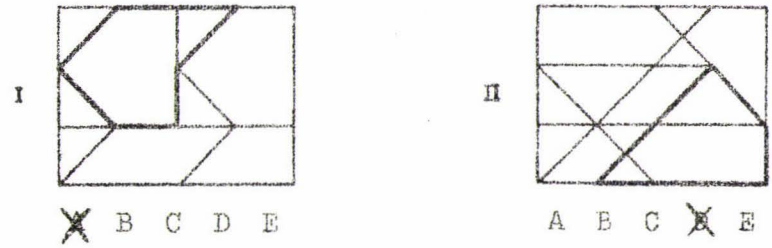
NOTE: There is only one of these figures in each pattern, and this figure will always be right side up and exactly the same size as one of the five lettered figures.

Now try these 2 examples.





The figures below show how the figures are included in the problems. Figure A is in the first problem and figure D in the second.



Your score on this test will be the number marked correctly minus a fraction of the number marked incorrectly. Therefore, it will not be to your advantage to guess unless you are able to eliminate one or more of the answer choices as wrong.

You will have 10 minutes for each of the two parts of this test. Each part has 2 pages. When you have finished Part 1, STOP. Please do not go on to Part 2 until you are asked to do so.

DO NOT TURN THIS PAGE UNTIL ASKED TO DO SO.

Developed under NIMH Contract M-4186

Part 1 (10 minutes)

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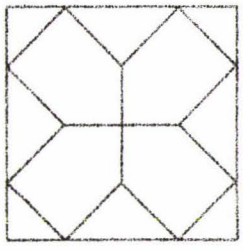

A B C D E

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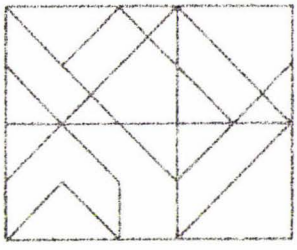

A B C D E

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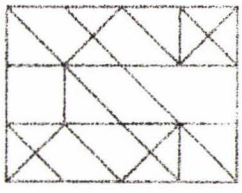

A B C D E

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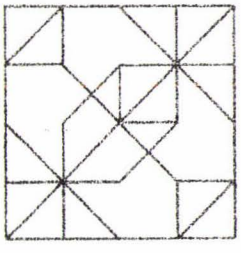

A B C D E

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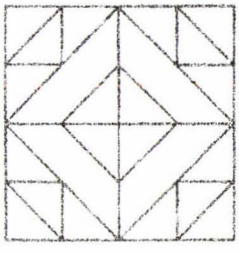

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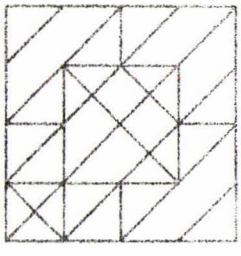

A B C D E

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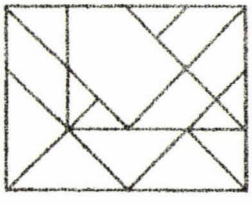
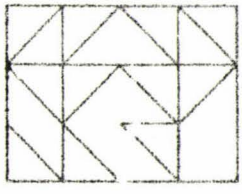


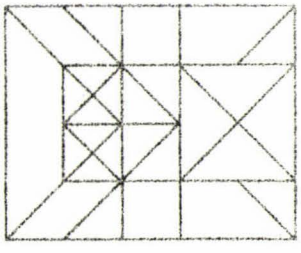
A B C D E

8.



A B C D E

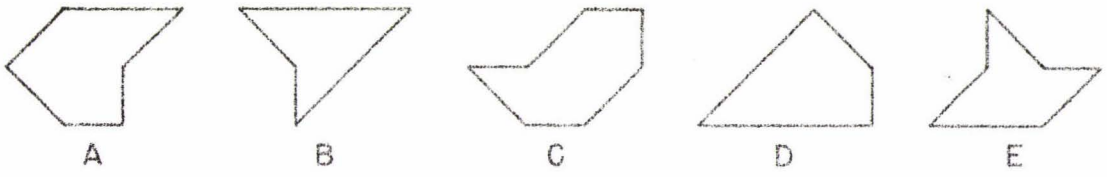
9.

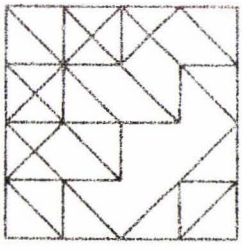


A B C D E

GO ON TO THE NEXT PAGE

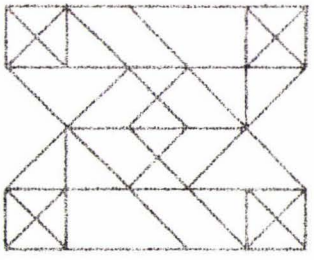
Part 1 (continued)





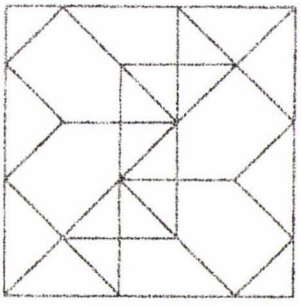
A B C D E

11.



A B C D E

12.



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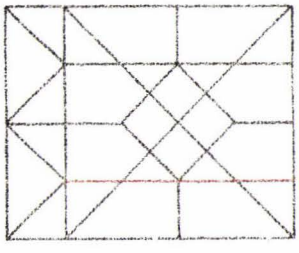

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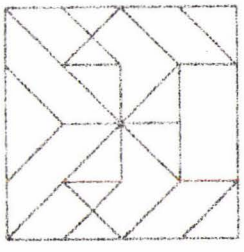

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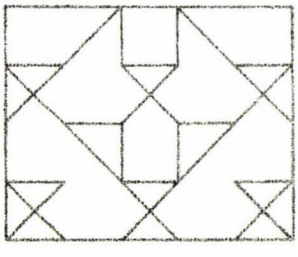

A B C D E

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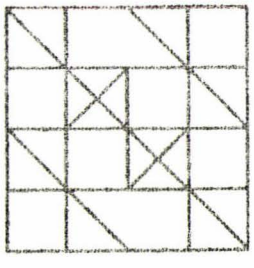


A B C D E

DO NOT TURN THIS PAGE UNTIL ASKED TO DO SO.

STOP.

Name : _____

HIDDEN PATTERNS TEST — CF-2

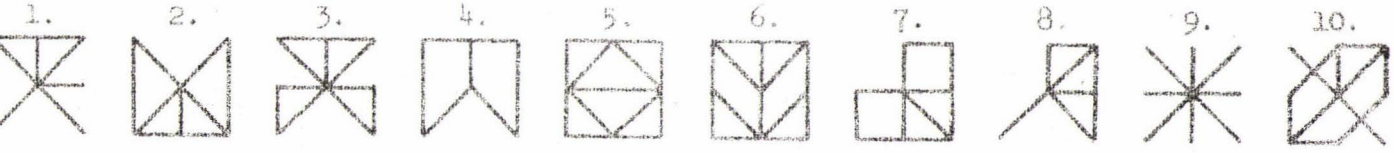
How quickly can you recognize a figure that is hidden among other lines? This test contains many rows of patterns. In each pattern you are to look for the model shown below:

The model must always be in this position, not on its side or upside down.

In the next row, when the model appears, it is shown by heavy lines:

( ) (x) ( ) ( ) (x) ( ) ( )

Your task will be to place an X in the space below each pattern in which the model appears. Now, try this row:



1. ( ) 2. ( ) 3. ( ) 4. ( ) 5. ( ) 6. ( ) 7. ( ) 8. ( ) 9. ( ) 10. ( )

You should have marked patterns 1, 3, 4, 8, and 10, because they contain the model.

Your score on this test will be the number marked correctly minus the number marked incorrectly. Work as quickly as you can without sacrificing accuracy.

You will have 2 minutes for each of the two parts of this test. Each part has two pages. When you have finished Part 1, STOP. Please do not go on to Part 2 until you are asked to do so.

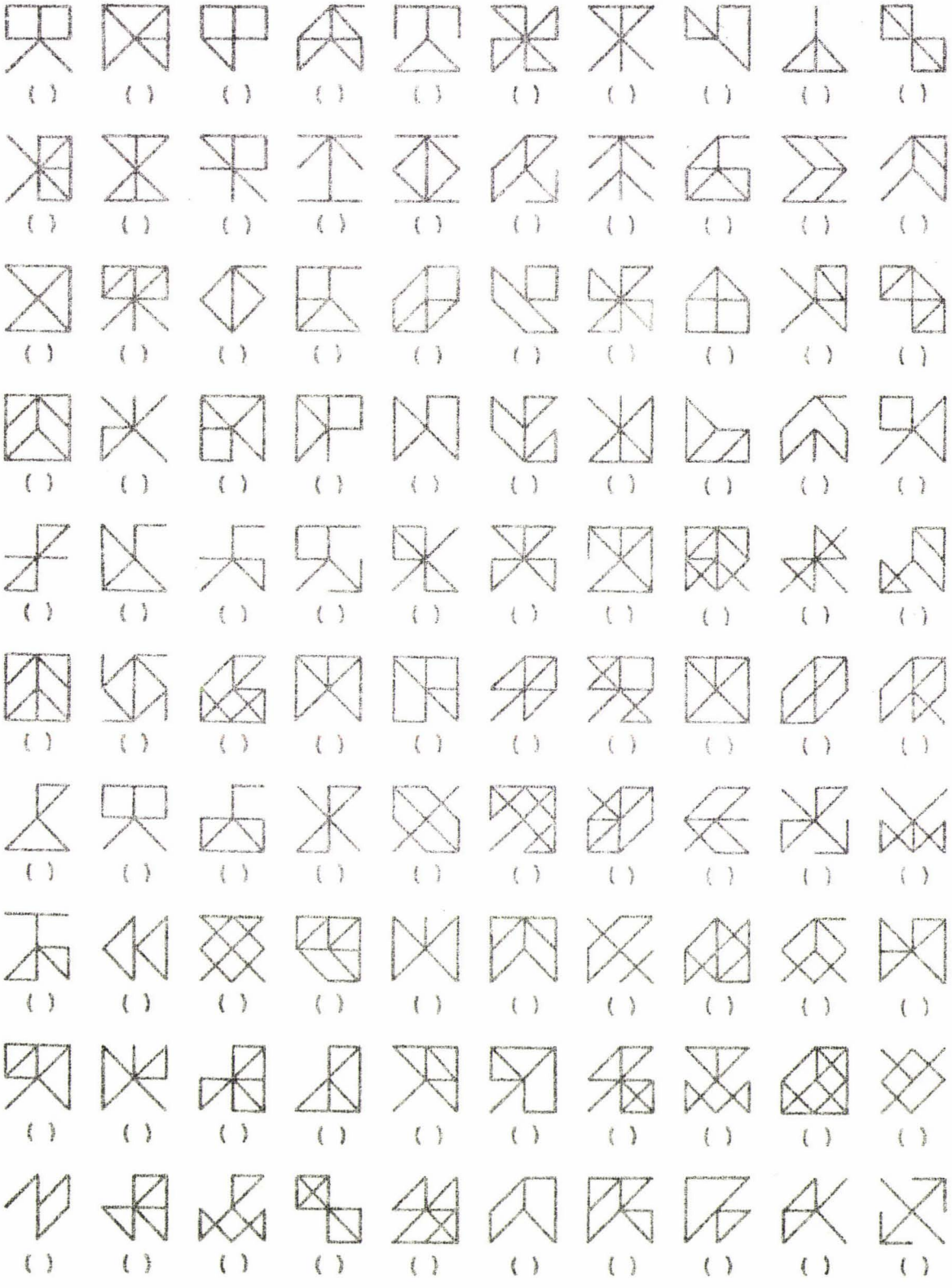
DO NOT TURN THIS PAGE UNTIL ASKED TO DO SO.

CF2

Page 2

Model:

Part 1 (2 minutes)



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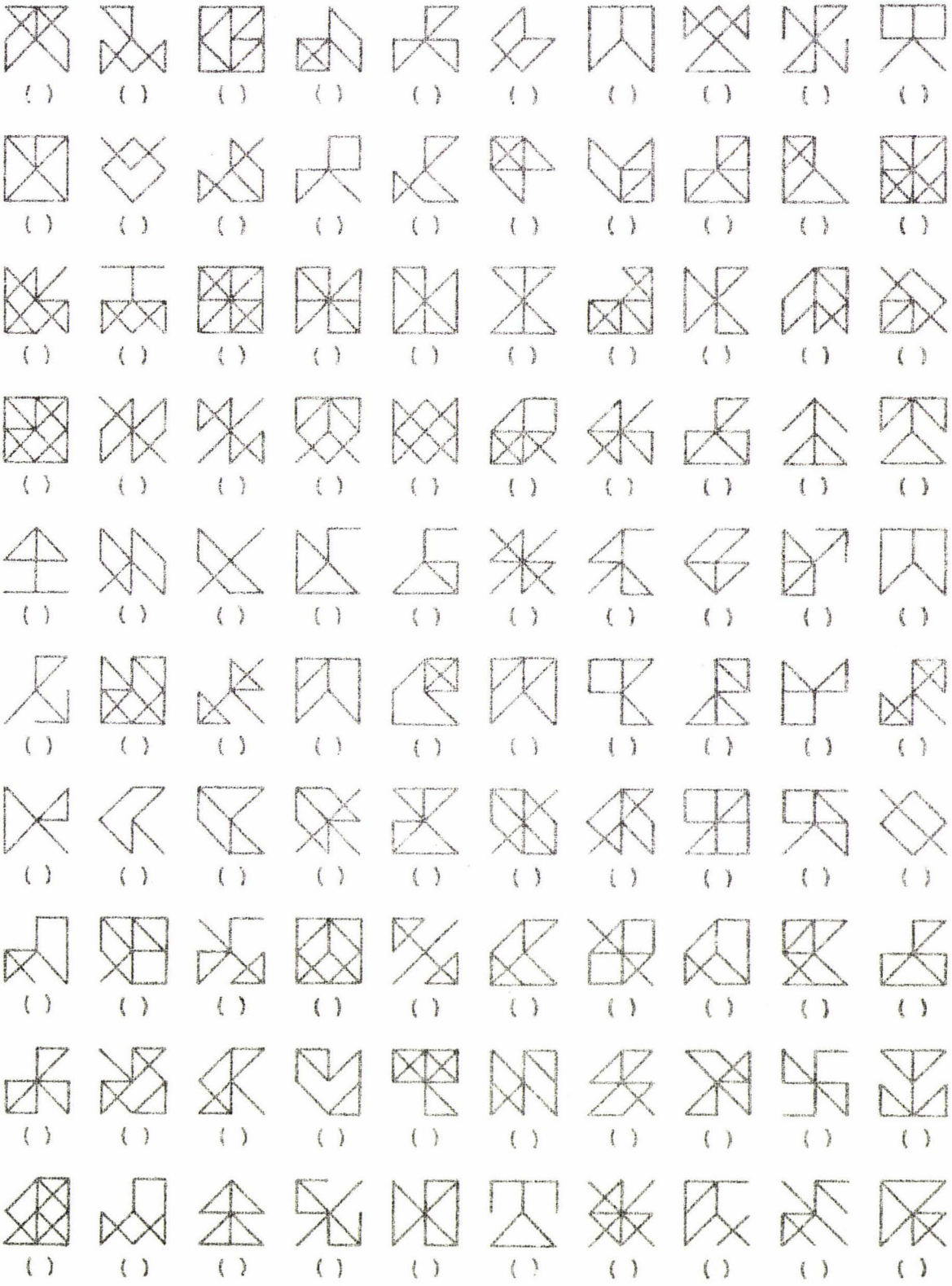
Part 1 (continued)

Model: 



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STOP.

Name: _____

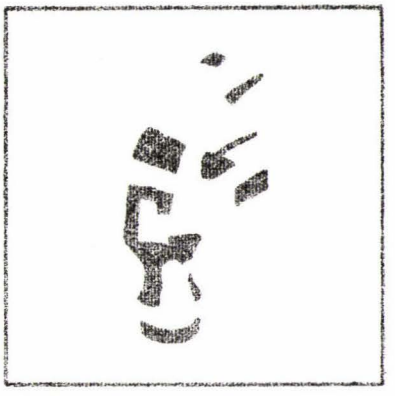
GESTALT COMPLETION TEST — Cs-1

This is a test of your ability to perceive a whole picture even though it is not completely drawn. You are to use your imagination to fill in the missing parts.

Look at each incomplete picture and try to see what it is. Write on the line beneath it a word or a few words telling what the picture is. You need not describe it in detail; just name the picture or its important parts.

Try the sample pictures below.

A _____



B _____

Picture A is a flag and picture B is a hammer head.

Your score on this test will be the number of pictures identified correctly. Even if you are not sure of the correct identification, it will be to your advantage to guess. Work as rapidly as you can without sacrificing accuracy.

You will have 3 minutes for each of the two parts of this test. Each part has two pages. When you have finished Part 1 (pages 2 and 3), STOP. Please do not go on to Part 2 until you are asked to do so.

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Part 1 (3 minutes)

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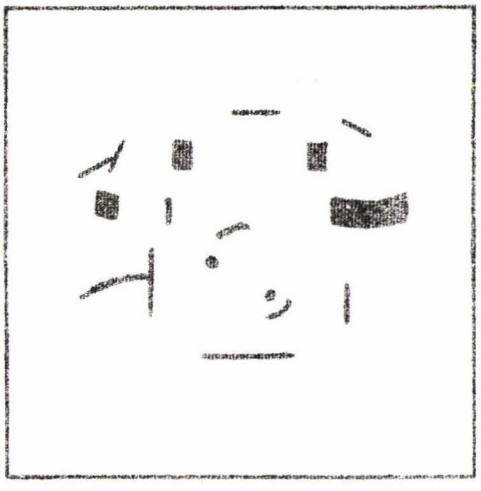

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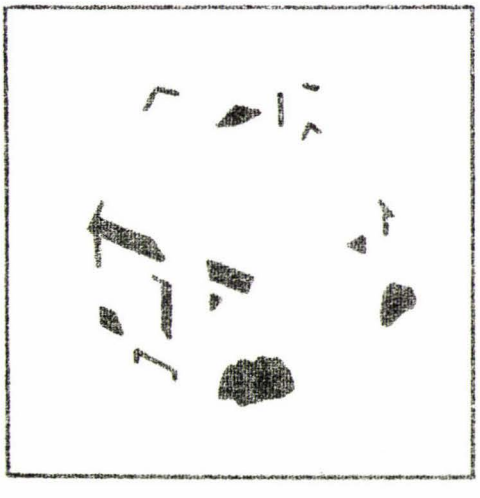

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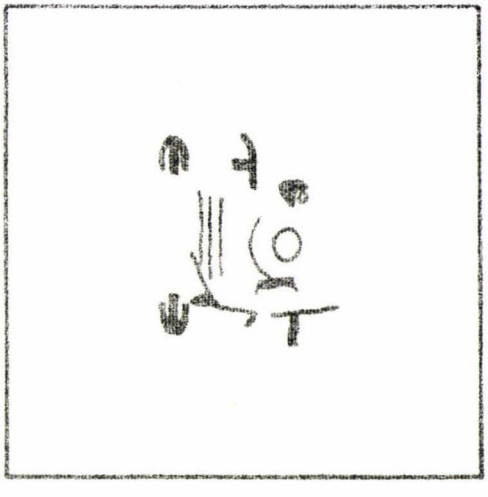

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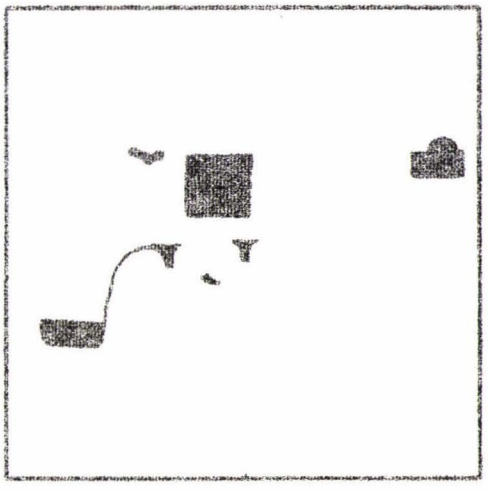
GO ON TO THE NEXT PAGE.

Part 1 (continued)

7 _____



8 _____

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10 _____

DO NOT TURN THIS PAGE UNTIL ASKED TO DO SO.

STOP.

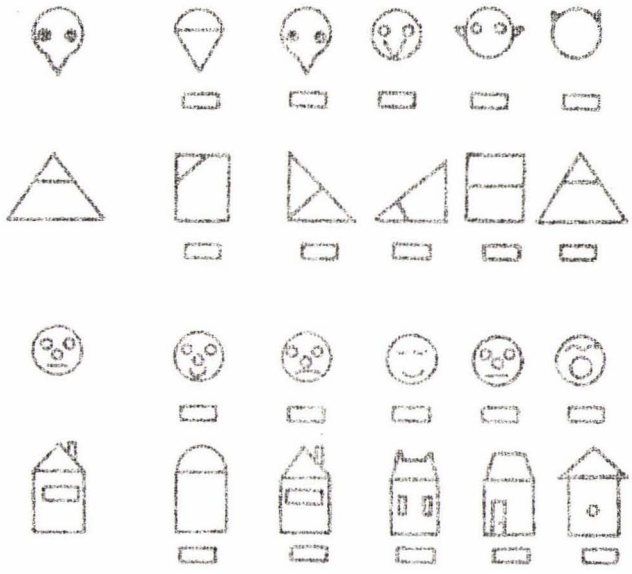
Name: _____

IDENTICAL PICTURES TEST — P-3

How fast can you match a given object? This is a test of your ability to pick the correct object quickly. At the left of each row is an object. To the right are five test objects one of which matches the object at the left. Look at the example below:

The third test object has been marked by blackening the space below it, because it is the same as the object at the left.

Now practice on the problems below. Mark them as fast as you can:



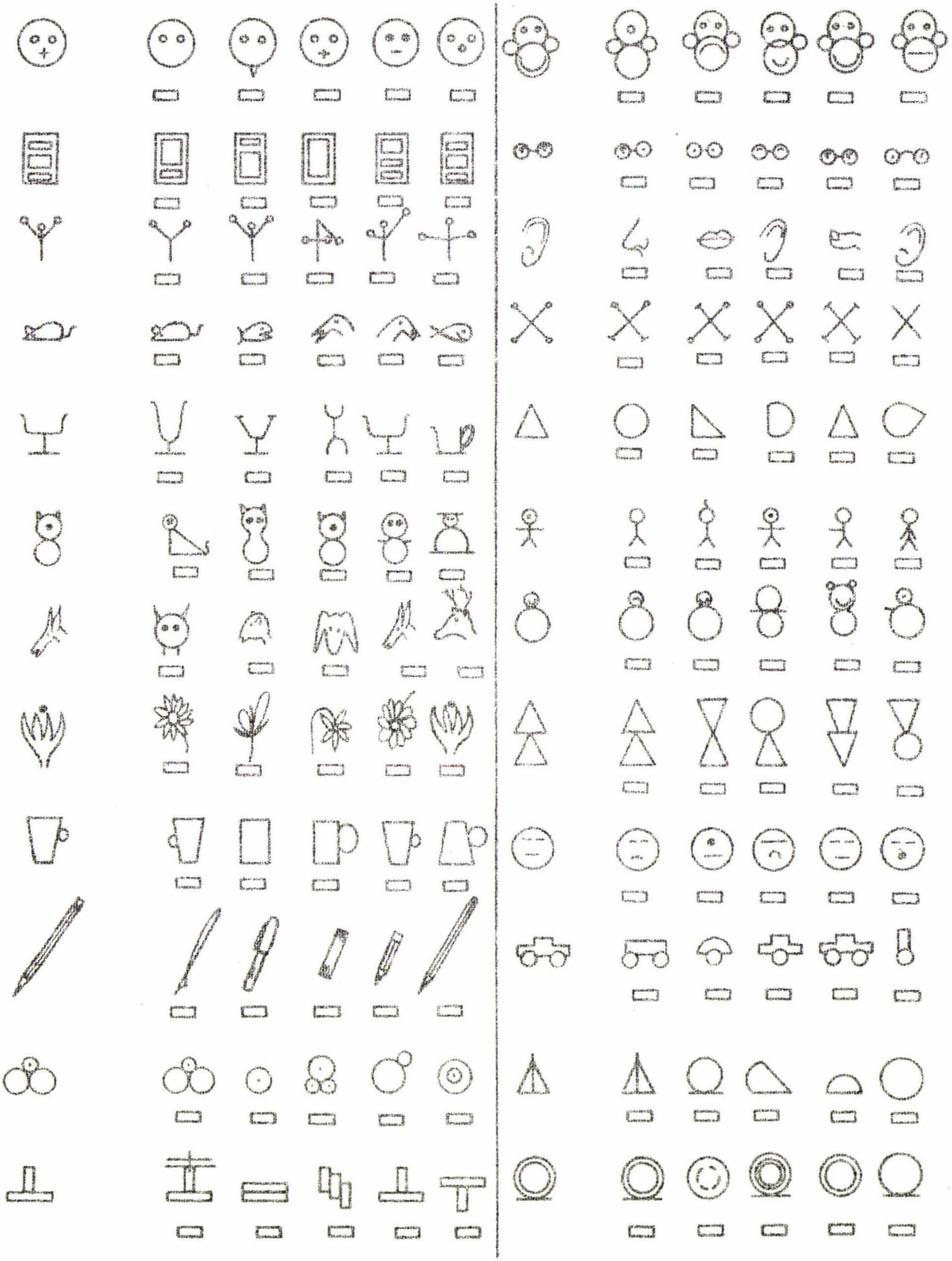
Your score on this test will be the number of objects marked correctly minus a fraction of the number marked incorrectly. Work as quickly as you can without sacrificing accuracy.

You will have 1 1/2 minutes for each of the two parts of this test. Each part has two pages. When you have finished Part 1, STOP. Please do not go on to Part 2 until you are asked to do so.

DO NOT TURN THIS PAGE UNTIL ASKED TO DO SO.

Suggested by Identical Forms by L. L. Thurstone

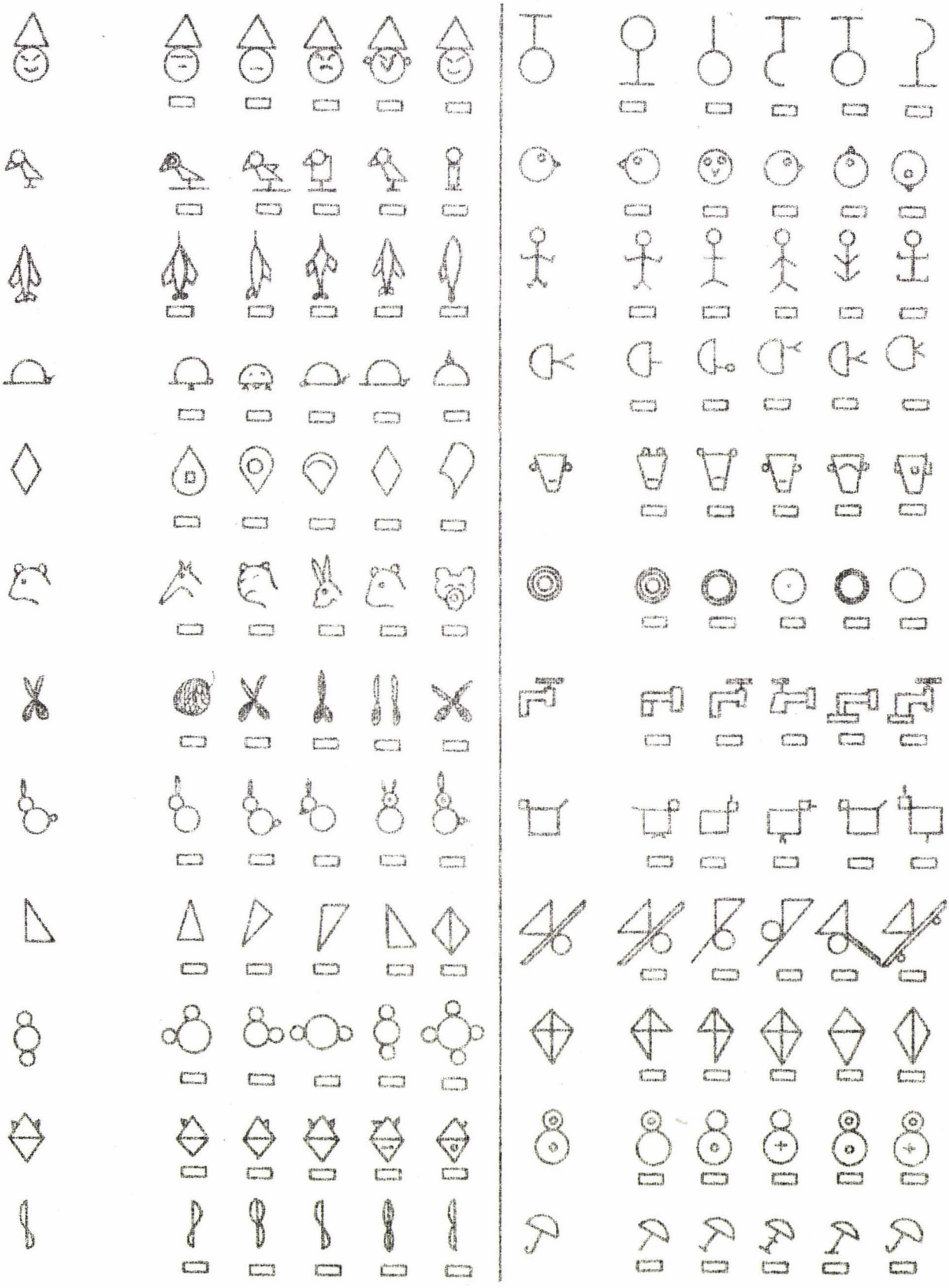
Part 1 (1 1/2 minutes)



GO TO THE NEXT COLUMN.

GO ON TO THE NEXT PAGE.

Part 1 (continued)



GO ON TO THE NEXT COLUMN.

STOP HERE.

DO NOT TURN THIS PAGE UNTIL ASKED TO DO SO.

STOP.

Test For Recall of Complex Stimuli.

Introduction

You will be asked to respond to three extracts of video-tapes of educational situations. One tape involves a remedial reading situation; the second tape involves teaching in an open-classroom setting; and the third tape is of a traditional intermediate classroom.

Whilst permission has been obtained from the people concerned for the use of these tapes, it would be appreciated if you regard them as confidential to this research.

Please do not write anything until the tape extract is completed. Each extract will last approximately five minutes and you will be allowed about eight minutes to complete the questions for each tape, so please work as quickly as you can.

Video-tape 1 2 3

Question 1

Please jot down as quickly as possible all the incidents, events or features of the tape you noticed. Write only a brief description about 3 to 5 words. Start each description, one to a line, on a separate line.

A.....

B.....

C.....

D.....

E.....

F.....

G.....

H.....

I.....

J.....

K.....

L.....

M.....

N.....

O.....

P.....

Q.....

R.....

S.....

T.....

Video-tape 1

Question 2

After you have jotted down brief descriptions of events, etc. you noticed on the tape. Would you please list three incidents in order, that you consider to be the most important, then write a few comments on why you consider them important.

Most Important (indicate by letter of the incident).....

Reasons.....
.....
.....

Next in importance.....
.....
.....

Next in importance .....
.....
.....

Question 3

What characteristic of the girl struck you most ?

.....

Question 4

Can you describe the picture at the back of the tester?

.....

Question 5

Have you any other comments to make about this extract?

.....

.....

.....

Video-tape 1 2 3

Question 1

Please jot down as quickly as possible all the incidents, events or features of the tape you noticed. Write only a brief description about 3 to 5 words. Start each description, one to a line, on a separate line.

A.....

B.....

C.....

D.....

E.....

F.....

G.....

H.....

I.....

J.....

K.....

L.....

M.....

N.....

O.....

P.....

Q.....

R.....

S.....

T.....

Video-tape 2

Question 2

Please jot down the three most important events, incidents etc that struck you on the tape, and then write a few comments on why you consider them important.

Most Important (indicate by letter....)

Reasons.....

.....

.....

Next in importance...(...).....

.....

.....

Next in importance ( ).....

.....

.....

Question 3 What would you think happened next in this classroom?

.....

.....

Question 4 Which individual, or group of individuals would concern you most, if you were the teacher of that group/class, and (identify in terms of placement on the screen.) Why ?

.....

.....

Question 5
Have you any other comments you would like to make about this extract?

.....

.....

.....

Video-tape 1 2 3 ✓

Question 1

Please jot down as quickly as possible all the incidents, events or features of the tape you noticed. Write only a brief description about 3 to 5 words. Start each description, one to a line, on a separate line.

A.....

B.....

C.....

D.....

E.....

F.....

G.....

H.....

I.....

J.....

K.....

L.....

M.....

N.....

O.....

P.....

Q.....

R.....

S.....

T.....

Video-tape 3

Question 2

Please jot down the three most important events, features etc that struck you on the tape, and write a few comments on why you thought them important.

Most Important (indicate by letter...).....

.....

.....

Next in importance ( ).....

.....

.....

Next in importance ( ).....

.....

.....

Question 3 Which individual caught your attention the most? Can you say why?

.....

.....

Question 4 What kind of relationship do you think existed between this teacher and the class? Could you pick this up from his teaching style or other conditions in the classroom? If so can you identify them or give reasons?

.....

.....

Question 5 Have you any other comments to make about this tape extract?

Thank you very much for your participation in this research to date, I hope you have found it interesting and not too tiresome. Have you any comments you'd like to make about the total project to date?.....

.....

APPENDIX 2

Technical Equipment

Cameras-	2 x ITC VF202 1 x ITC CTC8000
Video Recorder-	Sony 1" EV320CE Sony 1" EV310CE
Microphones	AKG D202 AKG D707
Radio Microphone	Sennheiser SM-1008

Equipment controlled from Massey University Caravan, by the use of remote control systems.

APPENDIX 3

Test for Recall of Complex Stimuli

Key Words and ideas used in Content Analysis of Question 2

1..pupil characteristics, physical and psychological.....
size, bulk, eyesight, hearing, needs, attitudes, affect, misery, happiness, ability, cognitive skills

eg 105-1A "needs consistent reminder of success and HELP"

2..pupil behaviour....the emphasis here on actual pupil behaviour restlessness, movement, wriggling; jumping;,working; listening

eg. 126-2B "other body actions can only indicate boredom"

3..teacher characteristics; physical and psychological same as (1) above, but with the teacher as target.

4..teacher behaviour (including role behaviour) as for (2) above including comments re- diagnosing, explaining, demonstrating, directing; responding, including use of humour and preparedness.

eg. "teacher good actor amazingly kept children entertained used personal life" 126-3C

5..teaching framework- a concern for goals and objectives; subject matter content; material and equipment and methods of presentation and handling class- on method not behaviour.

eg. 112-1B 'instructors method'
112-2A "aim of lesson"

6..environmental and situational variables of class and classroom as a whole. Its concern with class tone; atmosphere; spatial arrangement and physical aspects of the class. Only physical aspects coded- not relational

eg 119-2B "the confined area can hinder pupil activity"

7..relational..the emphasis here is upon relationships within the classroom, including the presence of third parties.

eg 123-1B "parents presence shows them problem at first hand"
123-2B "small groups enable teachers to give individual attention to slow learners"

8..task variables concerned with the tasks set the children

eg. 120-1C "task accomplished"

APPENDIX 4

Filmed Teacher Attentional Behaviour

Incident
An incident is a unit of verbal behaviour exchange, and ends when there is an interruption, or when the teacher obviously moves physically from one place to another, or when he makes an obvious decision to change subject.

Target (who)
Can either be a stimulus for a comment or teachers physical attention, or can be a response by teacher to something the pupil said.

Individual/group/class- self explanatory- except where difficulty is encountered in identifying target, go to the more global concept of group or class. The target is the one (group/class) directly questioned etc or responded to by teacher, so could be before or after the 'incident'.

Function (what)
Control or discipline- basically a need to dot the i's and cross the t's, and includes chastisement, any attempt to quieten the class or individual; any attempt to tell the class what to do- any direction concerning manners and social behaviour+ any direction concerning the initiation, maintenance and completion of task.

Subject/Content/Task is basically a concern for the content of a task or subject- eg discussing the role of prisons. Directions how to do things eg put your name at the top of the paper, would be a control comment.

Feedback/Affective/Association This category is concerned with the responses of the teacher primarily to pupils which indicate agreement or disagreement with regard to his behaviour. It also includes social chit-chat and expressions of warmth or hostility towards children

Action (how)
Initiate to initiate an action or sequence- which is not a response, nor soliciting nor directing behaviour.

Direct to give orders which requires compliance

Solicit to seek any information from a pupil, in a real sense to obtain their cooperation

Respond to any act or behaviour of the pupil

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