THE CONSTRUCTION OF HISTORICAL DURATION: DIFFERENCES BETWEEN CHINESE AND MALAY PRIMARY SCHOOL CHILDREN

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ABSTRACT

The present study is concerned with childrens' judgement of the duration of historical events, distant and recent, and, in particular with ethnic differences in a multi-cultural setting. It was designed to seek relationships between;

(i) the ways in which children construct the duration of historical events using time cues, and

(ii) race and sex differences in such construction.

The study was confined to Malay and Chinese primary school children in Malaysia. The sample consisted of 436 students, all in the 12 year age group. This age group was chosen because many of the studies relating to time and time judgement (e.g. Wallace and Rabin 1960) suggested that the development of a time concept occurs in children approximately at the same age and is generally expected to become fully established by the age of eleven years.

The investigation was carried out in two phases. The first phase comprised a group test designed to;

(i) assess group performances in judging the duration of historical events and

(ii) permit the selection of students for subsequent in depth interviews.

The interview which constituted the second phase, was divided into five separate parts. Its purpose was mainly to uncover the ways in which children used time cues in coming to conclusions about the duration of historical events and, in particular, beginning and end points.

The data from the group test were quantitatively analysed using analysis of variance to yield mean score differences between groups. The bulk of the findings from the interview questions are presented in the form of graphs, tables and profiles.

The group test findings indicate that there is little difference between sub samples in the way in which children come to conclusions about the duration of historical events. However, there is some relationship to be found between certain categories of answers and student performances in judging the duration of historical events. Dates of the events, in particular the beginning and end dates, were shown to be relevant to the process. Some of the other alternatives (other than the conventional scale of measurement e.g. dates) used by the children to come to conclusions about the duration of historical events are interesting. Many of them indicate the involvement and synchronization of two or more disciplines on which historical events bear. This knowledge is important because children can then be taught to develop the necessary frame of mind for cross discipline reference and consensus on historical time.

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INTRODUCTION

History has often been taught as a straightforward subject about events in the past that involved people and places. In such a context, the past is understood to be an extension of the 'contemporary' flow of time which is regarded as continuing indefinitely, and can: -

(i) be divided into units of duration and
(ii) have the location of events specified in it.

A child learning history is expected to be able to locate specific events, calculate units of time for events and also arrange past events in their order of chronological sequence. However such a simplified notion of history learning conceals a number of problems that children experience when trying to understand history and particularly when trying to sort out events so that they fall into the 'right' sequences and are understood as lasting for the 'right' legths of time.

The present thesis is primarily concerned with predicting and identifying some of these problems with a view, eventually, to improving the learning and teaching of history. There is however another problem that stands in the way. The study of the phenomenona of historical learning is relatively underdeveloped, not only is there a general lack of research and writing on the topic, but what exists is relatively restricted in compass. Nevertheless one of the newer approaches to the study of time appears to have promise. It makes use of the concepts of time orientation and time perspective particularly as determined by children's own cultural settings.

The approach of the present study is in accord with this new tradition. Its prime concern is to investigate the ways in which children from two ethnic backgrounds, Malay and Chinese, but living in the 'same' cultural milieu, Malaysia, perceive and conceive of historical time.

The chapters that follow provide an account of the study, thus the first chapter contains a critical review of literature on the time concept and its relation to time cues. The second chapter outlines the research design and methodology of the study. The results are given in two separate chapters. Chapter III contains the results from the Group test employed and Chapter IV contains the results from the interviews undertaken. The summary and findings of the study are discussed and conclusions are reached in Chapter V.

CHAPTER I

TIME AND THE STUDY OF HISTORY :

A CRITICAL REVIEW OF THE LITERATURE

The purpose of this chapter is to review some of the many dimensions and difficulties of time concept so that difficulties facing children whenever they are confronted with the problem of time judgement of historical events can be appreciated. Thus, this chapter provides mainly a broad treatment of the subject of time and its relation to time cues as the main source of time judgement in young children. Some aspects of psychological and personal variables that might influence the judgement on duration are also discussed.

There are several dimensions to the study of time but generally researchers focus on only one or two areas. This is because the concepts contained in each area are sufficiently complex that they rarely become effectively accomodated in the same study (Cameron *et al* 1977). The three main areas are usually considered to be: -

(i) the development of human temporal awareness,
(ii) time perspective, and
(iii) the explicit aspects of time concepts of succession and duration.

Each is discussed briefly below.

The developmental approach posits stages of human temporal awareness, based on the notion that the acquisition of time and time concepts develops in relation to the various stages of human cognitive development. Thus the developmental approach traces the way in which a child progresses in relation to his time learning process from simple concrete and intuitive perceptions to more complicated aspects of time understanding, which require a formal operation (Piaget 1969).

The second area is concerned with subjective judgements of time in relation to time perspectives. What is relevant here are the behavioural aspects of man as a social individual in relation to time (Wallace and Rabin 1960). Here the emphasis is mostly on social and cultural variables (Farrel 1953).

The third area, which cuts across both the preceding areas, focusses on the concepts of succession, duration, and the judgement of time (Levin *et al* 1977). Time judgements of these kinds can either be concerned with the measurement of the temporal cycle within the conventional time system, or it can be specific to the judgement of historical duration and as such, with no necessary relationship to conventional time scales. The former is often related to the measurement of short intervals of Clock Time while the later extends lineally into the past. But at certain stages in children's cognitive development very often these two types of time judgement merge.

The present study centres on the relationship between time judgement, (involving two concepts, sucession and duration), and historical duration because of a presumed relevancy to the learning and teaching of history.

It is part of the 'conventional wisdom' of teaching that the learning (and teaching) of history requires reference to the dates of events - in particular when judgements about the duration of historical events are needed. This point of view stems from the popular notion that children will not be able to construct durations without some reference to specifically identifiable points in time (Levin *et al* 1977). In reality, the teaching of history often becomes misconstrued as the teaching of names of historical places and dates of the events. Learners are then left to their own devices to sort out their historical relevance and organise them into chronological order. This, (also popular) conception of history, seems to originate from the theory that the mind contains collections of different perceptions continuously succeeding one another in rapid and perpetual flux. The smooth and uninterrupted progress of thought is achieved when connected ideas are sorted into sequential order (Hernshow 1956). Therefore when specific historical events are learned it is automatically assumed that correct chronological sequence of these events will be understood as dates are used to key the sequence in temporal order.

Given the general lack of scholarly attention to the learning of historical time and given too the general lack of attention given to it by teachers, it is reasonable to conclude that children are largely expected to grasp the concept of time on their own. Such an expectation and the assumption underlying it are open to question.

According to Smith *et al* (1977) the examination of the many difficult and complex aspects of 'time learning' is essential in order to appreciate its difficulty and also to help children develop understanding and improve their learning of history. Names of places and dates of events, and their chronological ordering or placing in history would accordingly be better understood. If children learn to construct a rationale for their judgement of duration of historical events, history will become more meaningful to them.

Like other subjects, the learning of historical time involves three essential aspects; the perceiving of relevant elements at the beginning, the assimilation of ideas as they enter cognition, and finally the acquiring of the skills later to be used to solve some of the problems relating to it (Gagne 1970). Furthermore, because history is particularly related to past events, some aspect of memory - related phenomena is also relevant (Piaget and Inhelder 1973). Clearly the learning of historical time is not confined to any one particular subject field or discipline but encompasses numerous disciplines.

One of the many aspects involved in the process of learning historical time is comprehending the relationship between the concepts of succession and duration. These two concepts are often regarded as one rather than two because they are not readily separated from one another. It is difficult to understand the concept of duration without comprehending the concept of succession (Levin *et al* 1978). Levin suggests that the understanding of duration <u>follows</u> the understanding

of succession and argues that the acquisition of the concept of succession constitutes a prerequisite for the development of the concept of duration. He considers that without a grasp of successiveness; and in particular, of the beginning and end points of an interval of time, it would be difficult to construct the intervals duration.

One of the most common mistakes made by young children when making judgement on duration is that they often make inferrences based on time cues directly as they first appeared to them. This not only affects their ability to judge the correction duration of the events but consequently results in their failure to group these events in their chronological order. This in turn further inhibits the learning of the time concept.

According to Wallace and Rabin (1960) there are many writers who have associated time 'sense' with physical and psychological factors. Examples are given by Gilliland *et al* (1946), Davidson (1941), Hoagland (1933, 1934 and 1943), Pieron (1936). In short, many of these authors attribute the lack of indepth inference of time cues to the lack of the 'proper faculty' of the child. Children were unable to cope with the more advanced content and complexities of time because they were not mentally ready for them. These authors suggest that the evaluation of the time relationship is not purely intuitive but involves an operational and psychological stability which is argued to be at its best equilibrium with more mature children. Smith *et al* (1978), Levin (1977) and Johoda (1956) suggest 11 years as the age when the concept of time becomes fully understood. Others (Friedman 1945, Roger 1967) claim that it will continue to improve till the age of at least 16 years and possibly 17 or 18. The disagreement between writers with regard to any specific age at which children are capable of fully understanding time and the time concept seems to suggest that there is more to it that merely strking the right balance between physical and psychological maturity.

The physical age of a person is not important in itself but rather in what it represents in terms of past experiences and knowledge relative to the subject of time. Furthermore there is the matter of how and how well these experiences and knowledge can be brought to bear to solve the problems related to time. This is an important assumption. It implies that understanding of time progresses from one stage to the other, and that children have the capacity to make full use of what they have learned. It follows then that as children become more receptive to relevant time cues, they would be more competent in judging the duration of an event. This would come about because past experiences and knowledge, continuously acting as an anchorage for a fuller and more meaningful understanding of time and the time concept, provides a secure basis.

Piaget (1969) suggests a point at which the concrete operation stage in respect to time merges into the formal operation stage. This latter level of understanding is difficult to reach. Not all children can appreciate the fact that time cannot be perceived directly but must be comprehended spatially e.g. as an interval between two points which then has to be interpretted according to the distance between the points to yield duration. It is only at the later stage of his development (physical and mental) that the child is able to extract the time elements from his daily experiences. As this ability gradually develops, he is able to understand time as being independent of space. From this it would seem, that the time concept is developed through indirect perceptual experiences. This contrasts with other concrete experiences; for example, a child feels the hotness of the stove, radiator, sun etc and associates these feelings with the concept of heat or the meaning of hotness (Farrel 1980). The use of Piaget's (1969) sequence of development stages with its strong correlation between age and cognitive development at each level, as a basis for 'explaining' the gradual 'built-up' or 'structuring' of the time sense in children, is consistent with the way in which other aspects of human development are regarded. However, the human

development approach gives rise to questions of the continuity of stages and the relationship betwen them.

Putfall (1973) has addressed this issue with respect to the learning of historical time. He starts from Piaget's (1952) position and argues a step by step development. He uses concrete representations of 'density' and 'length' to carry an argument by analogy.

Stage 1: Given two sets of equal length and density, the sets are the same and therefore will occupy the same time.

Stage 2: Sets of unequal length but equal density, means that the longer row has more elements and consequently imply a longer time.

Stage 3: Sets of equal lengths with unequal densities, mean that the denser row occupies more space and implies again a longer duration.

Stage 4: The true correlation between length and density is conserved and transformed systematically only, if one row is longer but is less dense than the other, it might either have more or fewer elements than the other.

At this later stage the lasting equivalence between sets is achieved by the systematic link or correlation of length, density and number.

At this point it is necessary to recognise the concept or idea of homogeneous time within the time system. That is, time is regarded as having constant velocity units. One hour today will be the same tomorrow as it was in the past. One hour is always made-up of 60 minutes. It is this principle nature of homogeneous time which allows time to be used as an instrument to measure the duration of any event. However, it is wrong to

assume that mastery of the homogenous time concept will immediately lead to the ability to judge the duration of an event. Even at the age of 7 some children still cannot differentiate clock time from the homogeneous principle of time and cannot appreciate that it has no direct relationship to the later. One study (Johoda 1963) found that at the age of ten, about three-quarters of the children investigated did not yet consider time as an abstraction, and felt that the advancing of the clock had repercussions on their age. It was not until thirteen that half of them understood: -

(i) time as an abstration to be considered independently from the functioning of a clock, and
(ii) that clock time is merely a conventional measure without influence on the changes that occur.

Other researchers consider that there is a further reason that leads children to become confused about the relationship between duration of an event and speed or motion. This is because any increase of speed or motion of the event is transformed into distance in time. Thus these children conclude the faster the speed or motion, the longer the duration. This clearly is incorrect, because time is inversely proportional to speed.

Between the age of 5 - 7 years old, children's temporal awareness is said to be the function of their own perception of the event or object (Johoda 1963). Here, the object or event is seen as the determining factor which influences time and thus is inferred as having a direct bearing to time itself. Thus time is the product of the direct transformation of the imputs or stimuli perceived by the senses. In general the stimuli relative to time are known as time cues, and the extent to which a child can sequentially order the events depends on the degree of familiarity with such time cues as are available (Johoda 1963).

The direct transformation of stimulus or input (time cues), often leads to confusion with the spatial dimension. 'Before' and 'after' in time become confused with 'before' and 'after' in space, and for example, a longer distance implies a longer duration (Piaget 1969).

Another misleading conception that children hold about temporal and spatial relationships, is that the amount of work produced or work done will in fact affect that duration. The more things are done, the longer the duration expected to be. This is described by Piaget (1960) as the Topological Stage, where density or 'crowding' is taken as having a complete and direct influence on time.

Putfall (1973) assets that the concept of time system is better understood if the number system is involved as well. It is not only necessary that children know the verbal meaning of the labels or numbers, he says, but they must also develop a corresponding appreciation of the relation of these numbers to the items or the events in the set or sets within the structure. According to Friedman (1977), the number of features within conventional time needs logical interpretation which, when mastered, may illuminate the developmental problem because it also has a temporal order like: -

(i) the cycle of time on a clock, and
(ii) seasons and the calendar years which can be linearly extended into various periods of time.

But they will still be within the context of conventional time.

The conserving transformations of number concepts for distance and density, is particularly relevant to younger children because number is the most stable factor which is used for reference in measuring time. It is generally assumed that in any event there will be 'sitings' at each end of the event and that the distance between the two ends provides the means whereby time measurement can be deduced or constructed.

However, the measurement of duration of an event depends on the placement of these 'sitings' - and these can be subjected to change. The duration of any event can be shortened or extended to new siting positions. For example, the siting positions of World War I can be between 1914 and 1918, that is between the time war was declared and the time the armistice was signed. But this sited position can be changed into a new position for example between 1900 and 1950, or the decades beginning 1911 and ending in 1920 etc, in which case different conclusions about its duration are possible and legitimate in context.

Therefore any measurement based on distance between any two siting positions becomes somewhat arbitrary or, more likely, relative to context. Nonetheless, contectual (French *et al* 1974) aside, one must at the same time presuppose the constancy and consistency of homogeneous time.

Logically then it would be simple to say that when children discover some of the systematic relations of length or distance, density and number, they will then come to grasp the implicit rules of time i.e. if one spatial property is held constant then one can infer the numeric relation between sets. This is similar to reasoning that because children can construct sentences in a grammatical, rule governed way, they therefore will 'know' the grammatical rules involved.

All this suggests that it should be more difficult for children to make judgements of the duration of past events which may have taken place in the early parts of their lives or before they were born. Because these events happened 'in the past', they can only be reconstructed as abstracted thought. According to Johoda (1963) for a child before about five, the past is a mixture of isolated fact and fancy, dictated by impulse of the moment. Things are remembered in a simultaneous manner, and grouped into the single category of 'yesterday'. The past is thus a kind of shallow mosaic of disparate impressions, whose interrelations are determined by factors other than chronological sequence.

It thus follows that a child's understanding of time will depend more on the variation of 'operational' equilibrium rather than direct reliance on their perceptual skills or logical reasoning. It will not be a matter of how much they can remember of the past events but also how well.

Orstein's theory, presented by Roger (1967) is quite relevant here. Orstein suggests that the perception of the duration of an interval is a function of 'storage size', that is, how many of the elements relating to the event were perceived and stored during the interval. Orstein expects this effect to be present in the construction of any historical event.

Traces of the extent of anyone's memory of past events depends: -

(i) on how much is perceived by the receiver and how meaningfully at the time, and

(ii) how perceptions after they enter into cognition are assimilated with other anchoring experiences and knowledge.

Some materials are more easily comprehended than others, without much need for rearranging or revising both new and old knowledge to enable accomodation. But others may have to undergo heavy changes before being taken to 'store' in the mind.

Studies on human behaviour on time judgement under controlled conditions support the relevance of subjective evaluation of time in time judgements of duration (Piaget 1969, Hutsch and Bortner 1974). Findings reported by Wallace and Rabin (1960) are also in agreement. All this, in fact, tends to confirm the belief that time is not directly perceived form the senses but has to be abstracted, and to a large extent changed from when it was first appreciated at the perceptual level.

For example, a child's impression of duration while an action is taking place can be influenced by many different temporal modalities like, for example, inner tensions created within or

outside the person. Although the child may be able to recollect the action or event vividly, either correctly or incorrectly, his psychological reaction at the time may become the factor that leads to a confused judgement of the event. The extent of the confusion or error will depend on the severity of such modalities as personal temperaments, moods, motivations (see Wallace and Rabin 1960) or simply the lapse of time between the time when it happened and the time it is recollected from the memory. Power of introspection is a strong element in the evaluation of 'live' duration. A long task may seem short when done quickly and with interest, but a long task may also be conceived as taking a longer time than it actually did if the person wants to dwell on what he has achieved during the period. On the other hand, a period of idleness seems long while it lasts but may be rememberd as being of short duration because nothing happened in the time. Filer and Meals (1949) show that students who exhibit clarity of task goal make shorter judgements of duration than those with unclear goals.

On the other hand, exceptional stress and anxiety causes children to overestimate their judgement of time, sometimes extending the interval period of action quite considerably. Other interesting situations which produced interesting reactions with regard to time are the intensity of light or sound, drugs or mental disorder of some form (Cameron 1977). This array of factors becomes controlled and organised by the exercise of critical evaluation or gradual correction during maturation (Piaget 1969).

Thus time can to some extent be an artefact of a person's total personality, his hopes, aspirations and even his own expectation of the future. All these factors it is argued influence judgement of time duration.

It is however also possible that the concept of temporality might differ between cultures (Cameron 1977). Schaie (1965) states that in cases where a persons'

perspective on time judgement is the issue, the most likely confounding source are the social and cultural factors (Huttsch and Bortner 1974). According to Huttsch (1974) the concept of time is not only bound by the cultural system in which the child exists but also to the different temporal emphasis he is tuned to appreciate.

Social and cultural aspects often unconsciously become the major factor in shaping aspects of cognitive and temporal development even in spite of the intentions of educational institutions. While the evidence to support this 'theory' is slight on the anecdotal level, people of non-western cultures sometimes appear to perceive time in a different manner than do people of western cultures. In many eastern cultures, social phenomena are frequently adopted as a frame of reference so that units of time are often fixed by the rhythm of collective life. For example, the Madagascar people speak of doing something 'in the frying of locust' (i.e. a moment) or 'in a rice - cooking' (about half an hour). This same phenomenon is found in the Malay society of Malaysia as well. In such cases temporal names are mediated by the respective cultures so as to create an abstract concept of time as continuous and even flowing, but in a manner different from the western sense of conventional time divisions, e.g. from milli-second to millennia.

Different cultures also have distinctive calendar systems. The Chinese have the animal cycle of year names where each of the animals symbolises good or evil forces and accordingly colours, future aspirations and fears. Whether this has anything to do with the Chinese seemingly pragmatic attitude towards the capatalistic and materialistic way of life is not quite clear.

The Malays on the other hand attach great religious rituals and beliefs to their time system. As moslems, knowing the right time for the five different prayers each day is essential. The Ramathan is a fasting month for the moslem Malays and this is followed by the holy pilgrimage to Mecca.

Again, studies carried out by Cameron *et al* (1977) show that some native Indian children when compared with Anglo American children have a lower degree of time conservation on both simultaneity and order of events. Some of the differences were attributed to differences in cultural emphasis with regard to time which consequently affected their out-look (perspective) on time.

From the point of view of the present study, the child's outlook on past historical events is more relevant because history deals with time periods that are often very long, from prehistoric beginning to the current events. Sometimes, such events are grouped into shorter chronological periods or blocks of related events. Moreover many of them occurred before the children were born and become more and more remote as the reference is located further and further in the past. Whether or not this receding factor affects judgement of the duration of events is relevant to the present study.

One particular study (Cohen *et al* 1954) discovered that the duration of time of events actually varies with the lapse of chronological time since these events occurred. As children consider events further and further into the past, judgements of the events' duration becomes relatively contracted. One of the hypotheses offered for this is that the seeming length of an interval may be a function of the retention of activity during the interval. As retention diminishes with time, there might be corresponding contraction of judgement of time interval. The same experiment also shows that for historical events, children aged between 8-13 years were unable to appreciate comparative intervals greater than about 1 year from the present time and were only able to locate events.

In brief summary then, the research in children's learning of historical time is relatively limited. As well, research in the understanding of the time concept suggests that the concept is more complex than education customarily takes for granted.

It is against this background that the attention of the present study is directed in the next chapter to: -

(i) a statement of the research problem, and
(ii) an account of the research design and methodology used in the study.

CHAPTER II

RESEARCH DESIGN AND METHODOLOGY

This chapter outlines the research problem and provides an account of research design and methodology for both phase I (the group test) and phase II (the interviews).

RESEARCH PROBLEMS:

Before describing the methodology of the study it is appropriate to surface the research problem with which the study is primarily concerned. The discussion on the problem draws heavily from Smith and Tomlinson (1977) and it is presented in the preceding chapter.
Smith and Tomlinson (1977) identified specific categories useful for clarifying student judgements of historical duration.

Smith and Tomlinson suggest that the Ornstein categories of time cues, associated with the judgement of historical duration, indicate that children not only think differently (as indicated by the different categories they transcribed) but also that the categories of time cues have different levels of difficulties as well. An equally interesting feature of their study implied a relationship between time cues and duration. The Smith and Tomlinson study provided useful categories that were adapted in the present study to permit an investigation of the learning of historical time.

Clearly, if historical time is to be properly understood it has to be learned. The question then becomes, how do children learn it? How <u>do</u> children come to an understanding of time and in particular, for this study, how do they come to an understanding of historical duration. Do they construct duration? Do they deduce it? Do they for example start from a knowledge of the beginning or end points of an event and 'calculate' the duration (as much history teaching presupposes)? Do they have an instinct we 'feel' for duration (as adults seem to have for events in their own life space)? Do they have some unique ways as yet not understood?

Such questions about learning have lead the study to start with several expectations about the ways in which children will construct historical duration. From the learning point of view, it is expected that they will use different methods for making judgements not only because there are many ways of understanding the time cues but because there are also several levels of comprehending them. This in turn presupposes different responses to the judgement of duration by the children under study.

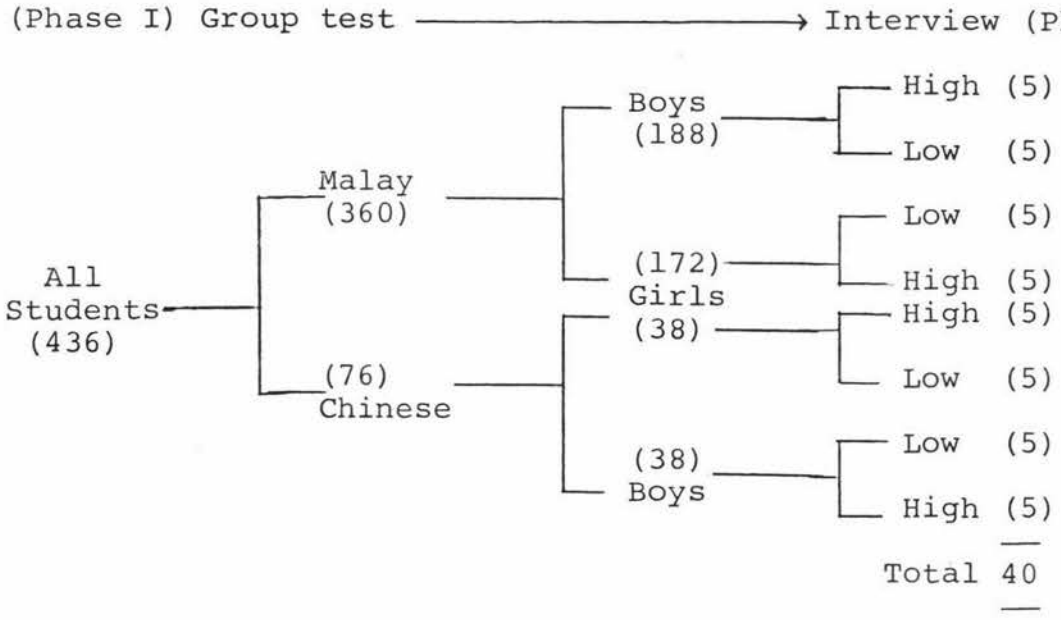
These expectations rely on one fundamental assumption, that there is a functional relationship between time cues and duration and that children do not only recognise this relationship (though not necessarily fully comprehending it) but have a logic for dealing with the relationship rather than working from intuition. How much they believe in the strength of the relationship between the two (time cues and duration) depends on their responses to the questions asked of them, these questions based on Smith and Tomlinson were designed to disclose some of the ways in which they come to judge duration.

The study was carried out in two phases. In the first phase, a questionnaire as a group test was administered to 360 Malay and 76 Chinese Malaysians. The objectives of the questionnaire were to: -

(i) assess the performances of the two respondent groups in judging the duration of historical events, and
(ii) provide a basis for selecting subjects for indepth interviews (phase II of the study).

The results on the group test were analysed separately for race and sex yielding four groups: Malay boys, Malay girls, Chinese boys and Chinese girls. From each of these groups the students who had attained the five top and five bottom scores were chosen for the interviews (40 in all). Figure 1 shows the number of students involved and the breakdown of the number of students from one phase of the study to the other.

FIGURE 1: Derivation of Interview Groups



The second phase of the study involved an interview consisting of five sets of questions all related to students' explanations of their judgement on the duration of historical events in relation to time cues. Students; responses from each of the interview questions were analysed by group to determine whether there was any relationship to be found between race, sex and test score.

The schools involved in the study will now be considered. Thereafter, the two phases of the study will be outlined in some detail.

SCHOOLS

All of the five primary schools used in the study were located in the district of Kluang, Johore, West Malaysia. The schools were once English Primary Schools but were transformed into National Type Schools in 1970 following the introduction of Bahasa Kebangsaan (Malay) as the main medium of instruction. The other types of primary schools in Malaysia (not used in this study) were, National Schools (Malay), Primary National Type Schools (Chinese), and Primary National Type Schools (Tamil). Table 1 shows the

different types of schools, their enrolments and teachers in the district of Kluang.

TABLE 1: SCHOOLS, ENROLMENT, STUDENTS & TEACHERS (31.1.80)

Type of School	No. of Schools	No. of Ss	No. of Teachers
National School	39	12,417	499
National Type School	7	4,457	146
Primary National Type School (Chinese)	28	13,136	395
Primary National Type School (Tamil)	19	1,986	104
Total	93	31,996	1,144

All primary schools are now being instructed in Bahasa Kebangsaan, but because they were once vernacular schools, many of them have been popularly associated with particular races. The racial stigma, still attached to many of these schools makes it almost impossible to find more than one racial group in each of the schools. For example, Malay students attend mainly National Schools, Chinese students attend National Schools (Chinese), and Indian students attend National Type Schools. National Type Schools were chosen for participation in this study because there is a bigger proportion of the two racial groups attending together than could be found in any other type of primary school.

Not all of the five schools chosen had the same status and grade.[1] Four of the schools were urban schools while one was

1. There are several factors taken into account in grading the schools and they are (i) the size of the school population and
(ii) number of staff managing the school.

Sometimes, the qualification of teachers as well as the availability of school facilities e.g. rooms, tables, etc are also taken into consideration. Any school with 800 or more students and with 20 or more teachers is graded as grade A. Those schools with 15-19 teachers with population ranging from 400-799 students are graded as B schools. Both the grades apply to schools in the present study.

rural. Four of them were co-educational and one was for girls only.

Clearly, it cannot be claimed that the sample represents the overall school population in the district or the state. The results are representative only of the five schools involved.

PHASE I: GROUP TEST

1. Students

There were 436 students involved in the group test, all of them were in standard six (as in 1980). Three hundred and sixty of the students were Malays: 188 were boys and 172 were girls. The remaining 76 students were Chinese Malaysians: 38 boys and 38 girls. All of the children were in the 12 year old group. Table 2 below shows their distribution.

TABLE 2: SAMPLE, FOR GROUP TEST X SCHOOL AND RACE

School	Malay		Chinese		Total
	M	F	M	F	
T.M.1	58	53	16	3	130
T.M.11	61	54	18	6	139
3rd Mile	41	29	1	4	75
Jubli Intan	28	23	3	2	56
Convent	-	13	-	23	36
Total	188	172	38	38	436

A set of tables containing information on enrolments, grades, teachers and teachers' qualifications are given in Appendix 6 together with history lesson timetables for each of the classes.

2. The Questionnaire

The group test consisted of a questionnaire of 57 items about history. Each question began with the words 'How long ....?'. The governing assumption was that each of the events had a beginning and end point, no matter how short or long the duration between the two points might be.

The questionnaire was designed to yield factual answers based on judgements made about the duration of (usually) historical events. Fifty questions were about events which happened in the past. Seven were of events extended forward into the future. In these items, the questions were mainly of a personal nature and were designed on the assumption that the future time will be controlled by a homogeneous time system - that is, an hour in the future will be of equal duration to an hour in the past and present. The other historical events are of two kinds distinguished from one another by their chronological distance in time. One is the distant past, and refers to decades or perhaps even centuries ago. The other, is the recent past, and this includes events that occured within the past 12 years, i.e. within the time of the child's own life experience.

Most of the items included in the questionnaire were based on the Primary School History Text Books for standards 3 through 6. However, as a whole, the test can claim little more than face validity since the items have not been tested before. The information sought by the questions had been taught at one time or another to all the children tested. (This was confirmed by class teachers responsible for the particular subject).

Although the items in the questionnaire may suggest no more than simple calculations involving time, for the purposes of this study they were appropriate for ascertaining the students judgement of time.

Examples of each type of historical item are given below.

Future events -
e.g. How long before the next Chinese New Year? .....

Recent events -
e.g. How long have you been alive? .....

Distant events -
e.g. How long ago was rubber introduced into Malaysia?..

A complete copy of the questionnaire is included as Appendix 1.

3. Procedure

For the schools' convenience, and so as not to disrupt the teaching of other lessons, it was decided to administer the group test during regular history classes. Thus the dates and time in which the test was carried out differed from one school to the other. However, the length of time for the test was standardized to 50 minutes and the students were informed of this verbally by the teachers in charge. The starting and finishing times were also written on the black board.

A sheet of paper explaining the purpose of the study and what was required of the students was also included with the questionnaire (See Appendix 2).

Supervision of the test was carried out by the respective teachers of the classes. When the period in which the teacher in charge had finished, another teacher scheduled to be in the class at the time continued with the supervision. Sometimes, the headmaster of the school took charge of the supervision. Most of the time the investigator was present during the test sessions.

At the end of each test, the test papers were collected by the teacher. They were either handed to the headmaster or to the investigator. All these test papers were marked by the investigator.

The marking system used was simple. Each correct answer to the questionnaire was awarded a single point or mark. No point was given for a wrong answer. The total score for each student was found by summing the correct answers. These scores were then grouped and comparisons were made on the students' performance within the racial and sex groups.

Analysis of variance using a two tail t-test was used to test the statistical significance of differences of within group and between group means. The analysis of variance of the total and mean scores yielded the significant differences according to: -

(i) race
(ii) sex
(iii) race and sex
(iv) schools

The results of the group test are given in Chapter III.

PHASE II: INTERVIEWS

1. Students

To derive the interview sample the results from the 436 students who sat for the group-test were classified by race and sex group i.e. Malay boys, Malay girls, Chinese boys and Chinese girls. Each of the four groups were then further sub-divided into high and low score groups, consisting respectively of the 5 students with the 5 top and bottom ranking scores. For cases where the number of students with appropriate scores exceeded the number needed random selection was used.

This particular procedure is relevant to the study because the study incorporate two different situations involving high and low score groups. It is likely that only one student may be in a particular rank for the high group and many students in any one of the five

different ranks of scores for the low group. For this reason, it was decided that each rank should include at least 1 student therefore reducing the discrepancy between the two groups.

Selection however was preceeded by a further 'screening' device. For students to be eligible for inclusion they must have attained at least two correct answers, one answer pertaining to distant event and the other to the recent events. This was done to permit later the identification of any significant patterns in relation to these two types of events. Table 3 below shows the distribution of students' selected for the interview.

TABLE 3: SAMPLE, SCHOOL AND RACE FOR INTERVIEW (PHASE II)

School	Malay				Chinese				Total
	M		F		M		F		
	H	L	H	L	H	L	H	L	
T.M.1	2	-	2	1	2	2	-	-	10
T.M.11	1	-	1	1	3	3	1	-	10
3rd Miles	1	3	-	1	-	-	-	1	5
Jubli Intan	1	2	-	1	-	-	-	1	5
Convent	-	-	2	1	-	-	4	3	10
Total	5	5	5	5	5	5	5	5	40

2. The Interview Questions

The interview material consisted of two components: -

(i) The interview question, and
(ii) The answer sheet

The interview questionnaire and the answer sheet are given in Appendix 4 and 5 respectively.

The Interview Questions: The interview schedule itself was divided into five parts each containing a set of questions. A general outline of the questions given to the groups of students selected for the interview is shown in Figure 11. Figure 11 also shows the types of responses required from the students. For example, interview question sets 1 and 11 were related to students' responses to categories of answers or time cues (a, b, c, ...).

A brief account of the five parts of interview questions are discussed below. However a more detailed account of each of the five questions will be discussed separately when the results and data analysis of each question are considered (in Chapter IV).

In part 1 of the interview schedule, the students were required to explain how they arrived at their judgement on the duration of the four historical events. These four historical events consisted of 'correct' and 'incorrect' judgements of both types of events previously given by the student in the group test. In part II, the students were asked to: -

(i) indicate which of the two in each of the sets of events took the longest time, and
(ii) give reasons for their answers.

In part III, the students were asked whether they knew the beginning and end dates of the four events (from part I). Part IV and V, explored in greater depth the relationship between knowing the beginning and end dates of any particular event and knowledge of the duration of these events. All the students' responses were recorded on the Answer Sheet specially designed for each particular question. An important aspect in interview schedule Parts I and II is 'time cuing'. It has been mentioned

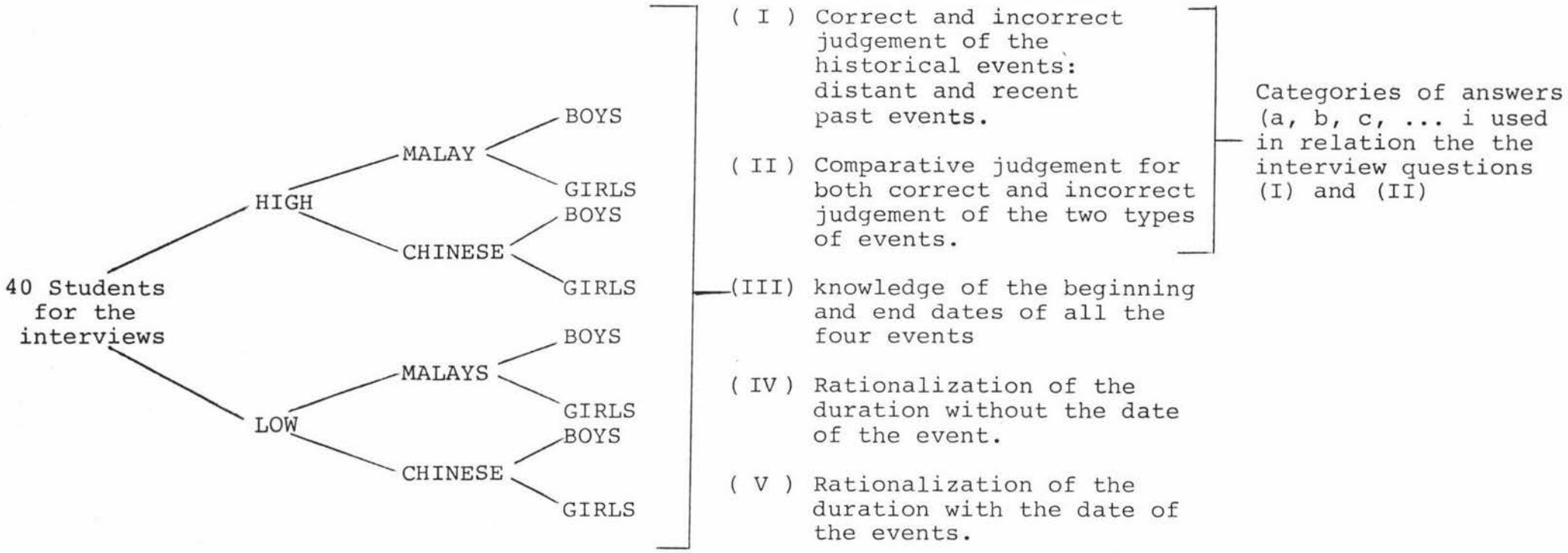


Figure 2: Interview Questions

earlier that students are expected to rely upon certain cues which help them in judging the length of time or duration of an event. These cues may take various forms but in the case of this particular study they would have to be in the form of information or knowledge learned or experienced and understood to have some bearing on time. They are classified as time cues because they are related to time or are understood to be so by the children. However, time cues may be of various kinds - not necessarily reflecting to time themselves. The essential criteria is that the children are able in some way or other to link them logically to time and duration then they are acceptable as time cues. For the present study several categories of time cues were taken from a previous study carried out by Smith and Tomlinson (1977).

Smith and Tomlinson identified eight categories which they considered to account for the ways in which the comparative judgements on the duration of historical intervals occur. The first seven categories are in the order of inherent complexity, they are: -

1) Pure Ornstein: The subject allocates duration on the basis of the number of items contain in the event.

2) Centred Ornstein: The subject allocates duration on the basis of the number of particular types of items in the event.

3) Activity centration: The subject bases assessment of the duration on the total amount of activity.

4) Ornstein: Subject demonstrates the operations of either category 1 or 2, or both but also indicates the need for an independent scale e.g. calendar years.

5) Equal interval transitional which indicates the subjects' awareness of the need for an interval scale or aspects of it, but still unable to use it fully.

6) Consistent equal interval: The subject consistently

applies an equal interval scale (usually in terms of calendar years).

8) Unscorable - arbitrary.

In the present study, there are nine categories that resulted after certain adaptations were made to the Smith and Tomlinson categories. They are not exactly the same as the above. To simplify matters all the categories were assigned alphabetical letters, instead of the specific names. However they are all explicitly related to specific types of time cues relative to judgement of historical duration. An additional category was introduced to provide an avenue for students to utilize further their temporal experience within the historical framework which may not have been covered by Smith and Tomlinson (1977) in their study.

The categories used in the present study are given below. Each category reflects a particular way in which a conclusion has been reached about the duration of the events - the way in which duration has been 'constructed'.

Judgement of duration is based on: -

a) Arbitrary (inexplicable / unscorable)
   - no response
   - meaningless response, vague or inconsistent inrationale.

b) Number of items in the event: Subject allocates duration on the basis of the number of items believed to be contained in each event. The greater the number of items in the event the longer the time it is expected to take.

c) The perceived length of time of some particular type of items within the event. If respondents are more selective of some items it is presumed that these items are more relevant than others to the students.

d) The perceived rate/speed of activities throughout the event. Respondents are guided by the principle movement of time to speed. That is speed or velocity is inversely proportional to time, i.e. the faster the speed perceived by the students of the event the shorter the time it is expected to take.

e) The perceived spatial distance (promoted by the activities in the event) in relation to time. Respondents are inclined to associate the distance travelled and time in proportion. That is the greater the distance perceived the longer the time it is expected to take.

f) Reference to the consistent equal interval (e.g. in terms of calendar years). Respondents are aware of the interval movement of the time and some of its principle qualities, i.e. in relation to the consistency of its movement or speed, etc. But they are not fully aware of all of the aspects of time and time intervals.

g) Reference to dates and in particular the beginning and end dates of events.

h) Knowledge of the (correct) duration of an event.

i) Others: This category is especially made available for any other responses that are not within the seven categories of answers mentioned above. It is particularly important as students are allowed to explore any possible experiences relative to time and time judgement within the framework of historical events.

For the present study then, all answers were categorised a through i . The basis for categorising was derived from previous studies and literature on the subject of time judgement of historical events, and in particular,

from the study carried out by Smith and Tomlinson (1977).

3. Procedure

The interviews were carried out on several different occasions during school hours, in an empty classroom or, when this arrangement was not possible, in the school library. For the schools' convenience, both the high and low score groups of students were assembled for inteview during the same period. In this way, schools and students did not have to be interrupted more than necessary. Prior to the inteviews, a time was set or agreed upon by the investigator and the headmaster of the school concerned. Sometimes, the class teachers were also consulted.

The students were interviewed individually and in the alphabetical order of their surnames. They sat down at a table and chair facing the investigator. They were then reminded of the first group test that they did earlier, but no further information on their work or grade were given. However, they were informed of the intent of the interview as well as what was expected of them in order for them to help the study. This induction was kept consistent by the use of a standard format for all the students. A copy of the induction is provided in Appendix 3.

The interview had no standard time, but generally a period of 35-40 minutes was allowed for each student.

The next chapter will discuss the results and data analysis of the group test.

CHAPTER III

GROUP TEST

RESULTS AND DATA ANALYSIS

This chapter is concerned primarily with reporting the results and findings of the Group test. The number of correct answers overall was small - only 17%. Out of the original sample of 436 students, 348 of them scored below 25%. Of the remainder, 87 scored between 25% and 50%, while only 1 managed to score above 50%. The small percentage of correct answers occurred in all four groups: Malay boys, Malay girls, Chinese boys and Chinese girls. Out of the 188 Malay boys, 153 scored below 25%, 34 scored between 25% and 50% and 1 above 50%. Of the Malay girls, from a total number of 172, 146 scored at or below 25%, 26 scored between 25% and 50%. The Chinese students did relatively better than the Malay students. Out of the 38 students, there were 10 Chinese boys who scored between the 25 and 50% and 28 scored at or below the 25%. The Chinese girls however had 17 students who scored between the 25 and 50% and 21 students scored at or below the 25%.

The small percentage of correct answers is also reflected in the group total and mean scores. Apart from the low score in all the four groups, the Chinese students seem to have done better than the Malay students. Table 4 shows the Group test scores; their totals, means and S.D., and Table 5 shows the sub group comparisons of means. The difference between the mean scores of the Chinese and Malay students is significant at .01 levels. As Table 4 shows, the mean scores of the two groups of boys (Chinese and Malay) are identical. There is accordingly, no significant differences between their means (see Table 5). On the other hand, the difference between the means of the Chinese and Malay girls is significant at .01 levels. With regard to the different sex groups, there is only a small difference between their mean scores, and consequently their mean difference is not significant.

TABLE 4 : GROUP TEST SCORES: TOTALS, MEANS AND S.D.

Group	No. of S	Total Score	Mean	S.D.
Malay boys	188	1,841	9.8	5.5
Malay girls	172	1,600	9.3	4.6
Chinese boys	38	373	9.8	6.8
Chinese girls	38	497	13.1	5.9

TABLE 5: SUB GROUP COMPARISON: MEANS

Groups	Mean Difference	t	Significance
Malay boys and girls	5	.94	Not significant
Chinese boys and girls	3.3	2.26	Significant at .05 level
Malay and Chinese boys	0	0	Not significant
Malay and Chinese girls	3.8	3.73	Significant at .05 and .01 levels

As far as the school groups are concerned, the total scores and mean scores showed some differences between the schools performance. Schools were paired for comparison. Out of the 10 pairings, 7 of them were significant and 3 were not. The highest of the mean scores is yielded by Convent School with a mean score of 12.83. The lowest mean score is 7.68 yielded by 3rd Mile School. Mean difference between these two schools is necessarily higher than any other pairing. Differences in means between school pairs are consistently significant whenever any one of the five schools is paired with either Convent School or 3rd Mile School. T.M.S. (1), T.M.S. (11) and Jubli Intan School had close total and mean scores and consequently there is no significant mean differences between these schools. The following tables, 6 and 7 shows the

different school total and mean scores and the significance of difference between the means of the pairings.

TABLE 6: GROUP TEST SCORES X SCHOOL: TOTALS, MEANS AND S.D.

School	No of Ss	Score	Mean	S.D.
T.M.S. (1)	130	1,248	9.6	6.26
T.M.S. (2)	139	1,422	10.23	4.81
3rd Mile	75	576	7.68	4.47
Jubli Intan	56	563	10.05	4.39
Convent	36	462	12.83	5.87

TABLE 7: SCHOOL COMPARISON: MEANS

School	Mean Difference	t	Significance
T.M.S. (1) & T.M.S. (11)	.63	.92	Not significant
T.M.S. (1) & 3rd Mile	1.92	2.55	Sign. at .05 & .01
T.M.S. (1) & Jubli Intan	.9	1.12	Not significant
T.M.S. (1) & Convent	3.23	2.88	Sign. at .05 & .01
T.M.S. (11) & 3rd Miles	2.55	3.88	Sign. at .05 & .01
T.M.S. (11) & Jubli Intan	.18	.25	Not significant
T.M.S. (11) & Convent	2.6	2.45	Sign. at .05 & .01
3rd Mile & Jubli Intan	2.37	3.03	Sign. at .05 & .01
3rd Mile & Convent	5.15	5.65	Sign. at .05 & .01
Jubli Intan & Convent	2.75	2.44	Sign. at .05 & .01

The low percentage of correct answers and scores yielded in the Group Test could have been caused by the questionnaire itself. Analysis of the items of the questionnaire show that all the students were unable to give correct answers to at least 11 (19%) of the questions. However, the number of items which yielded incorrect answers for all students were 2.9 times greater among the low scoring groups than the high scoring groups. Of the items that yielded incorrect answers 71.42 percent were distant event items, 25.19% were recent event items and 2.4% were future event items.

However, the low percentage of correct answers does not necessarily affect the selection process used for the second phase of the study. All the selected students were 'equal' in that each had at least one correct and one incorrect answer for each of two distant and recent past events.

COMMENT

The purpose of the group test was two-fold, first to ascertain group performances on the test itself, and determine whether any significant sex, race or school differences surfaced, and secondly to select students for the inteview. These aims were achieved.

The results indicate relatively few race, sex or school differences, except notably the mean difference between the Malay girls and Chinese girls scores. There was no difference in the mean scores of the Chinese boys and Malay boys. There was also no significant mean difference between the sex groups. However the mean difference between the racial groups was significant at .01 level. Overall the Chinese girls did better than any other group and, since the majority of them came from the Convent School, it is also reasonable to infer some school effect on the results.

The following chapter is primarily concerned with reporting the results and findings from the interview questions, beginning with interview question Part I through interview question Part V.

CHAPTER IV

INTERVIEW QUESTIONS

1. INTERVIEW QUESTION I:

Interview question 1 was specifically designed to yield time cue preferences, when assessments of the duration of recent and distant events were required. The students were confronted with four different historical events. Not necessarily the same for all students, but nevertheless, events for which the students had all estimated duration during the Group Test. For each of the four events, students were required to give verbal answers. The students had to explain how they came to draw conclusions about the durations of these events. They were allowed one or more explanations of their answers and these answers were then matched with the categories of time cues which had already been determined. This procedure was based on the assumption that there is a functional association between time cues and time judgement.

This was done by matching. The students' responses were matched with the categories* and each matching answer was awarded a single point. The points were added together and the total average score for the three groups was analysed. In this way a profile of group responses for all the categories of answers could be established.

For any of the students' responses that matched category i of the categories of answers, additional explanations were sought and recorded in full. Detailed examples of some of these particular types of responses are to be found on pp 44.

Tables 8, 9 and 10 show in detail group responses to the four questions mentioned above. They provide scope for comparisons of groups based on 'correct' and 'incorrect' responses in the original group test.

* The categories which were a,b,c...i do not have specific names or titles, a description of their character however is to be found in pp 28 - 29.

TABLE 8: SUB-DIVISION OF RESPONDENTS INTO MALAY AND CHINESE SUB-GROUPS

Race	Respondent Group	Type of Events	No. of Students	a	b	c	d	e	f	g	h	i
Malay	Correct	Distant	20	3	1	1	0	0	0	10	14	3
		Recent	20	0	0	0	6	0	9	10	12	7
	Incorrect	Distant	20	8	8	1	0	3	1	0	1	6
		Recent	20	12	1	0	2	0	0	2	0	5
		Total	80	23	10	2	8	3	10	22	27	21
Chinese	Correct	Distant	20	1	0	1	2	0	0	12	18	0
		Recent	20	1	0	0	5	0	13	8	3	0
	Incorrect	Distant	20	14	5	2	1	3	1	0	1	2
		Recent	20	15	1	0	2	0	0	5	0	3
		Total	80	31	6	3	10	3	14	25	22	5

TABLE 9: SUB-DIVISION OF RESPONDENTS INTO HIGH AND LOW SCORE SUB-GROUPS

Score Group	Respondent Group	Type of Events	No. of Students	a	b	c	d	e	f	g	h	i
High	Correct	Distant	20	0	0	0	1	0	0	17	16	0
		Recent	20	0	0	0	4	0	13	13	8	0
	Incorrect	Distant	20	8	11	1	3	5	2	0	1	4
		Recent	20	12	1	0	4	0	0	6	0	4
		Total	80	20	12	1	12	5	15	36	25	8
Low	Correct	Distant	20	4	1	2	1	0	0	5	16	9
		Recent	20	1	0	0	7	0	9	5	7	7
	Incorrect	Distant	20	14	2	1	0	1	0	0	1	4
		Recent	20	15	1	0	0	0	0	0	0	4
		Total	80	34	4	3	8	1	9	10	24	24

TABLE 10: SUB-DIVISION OF RESPONDENTS INTO MALE AND FEMALE SUB-GROUPS

Sex	Respondent Group	Type of Events	No. of Students	a	b	c	d	e	f	g	h	i
Male	Correct	Distant	20	3	0	0	1	0	0	9	17	3
		Recent	20	0	0	0	5	0	12	8	8	5
	Incorrect	Distant	20	10	6	0	2	2	1	0	2	5
		Recent	20	9	2	0	4	0	0	4	0	6
		Total	80	22	8	0	12	2	13	21	27	19
Female	Correct	Distant	20	1	1	1	3	0	4	12	12	2
		Recent	20	1	0	0	6	0	10	10	7	2
	Incorrect	Distant	20	12	7	2	1	4	1	0	0	3
		Recent	20	18	0	0	0	0	0	3	0	2
		Total	80	32	8	3	10	4	15	25	19	9

RESULTS

The results found in tables 8, 9 and 10 are perhaps better expressed as profiles or graphs. Figure 3 shows the category mean scores for the total sample. In it category a attains a score of 54 (the highest) and c a score of 4 (the lowest). Category e, b and d are similarly small, but the two latter categories have a slightly higher score than the first. Categories f and i have higher mean scores, 25.3 and 28.6 respectively. Mean scores for categories g and h are distinctively higher than the rest of the categories but fall slightly below category 1.

The group mean scores for the categories produce profiles similar to that found in Figure 3 for the Interview Question 1. The category with the highest score was category a, followed by categories h and g. They were closely followed by categories f and i. Low mean scores seem to be centred on categories c, e, b and d. The mean scores for each group can be examined more clearly in the separate profiles

provided in Figures 5, 6 and 7.

Figure 5 shows the category mean scores for both the Malay and Chinese sub-groups. As mentioned earlier, the patterns of group responses do not vary from the total sample scores much except that the Chinese students have a slightly higher mean score on categories c, d, f and g, but lower on other categories especially category i where the Chinese students had only 5, in comparison with the Malay 21. Only small differences in category mean scores can also be found between the male and female sub-groups. Again, the patterns or profiles are similar. However, distinctions between the two sub-groups are apparent in categories a and i. Figure 6 shows category mean scores for high and low score sub-groups. Although distinctive patterns of response are more noticeable, the pattern or profile of students response to the categories relating to time cues remains similar. Smallness in mean scores are similarly recorded in categories c, e, b and d with the low score group having considerably lower scores, except in category c. However there are three categories which recorded distinct response between the two sub-groups. They are categories a, h and i. But for category h, both sub-groups had almost the same scores.

The results suggest some association between certain types of categories of answers and students' performance in judging the duration of historical events. In particular Figure 5 and Figure 7 also suggest that there are similar associations within each of the race and sex groups.

Apart from that, the results show that many of the students in the high score group gave category g and h as their answers (see Figure 6), whilst the low score group gave category c, e and i answers. The low score group was also expected to be high in category b as well, even though Figure 6 indicates that it was the high score group who recorded higher scores in category b. However, this is only because many of the students from the high score group who favoured category b were among those who actually gave (the

text continues on pp 44)

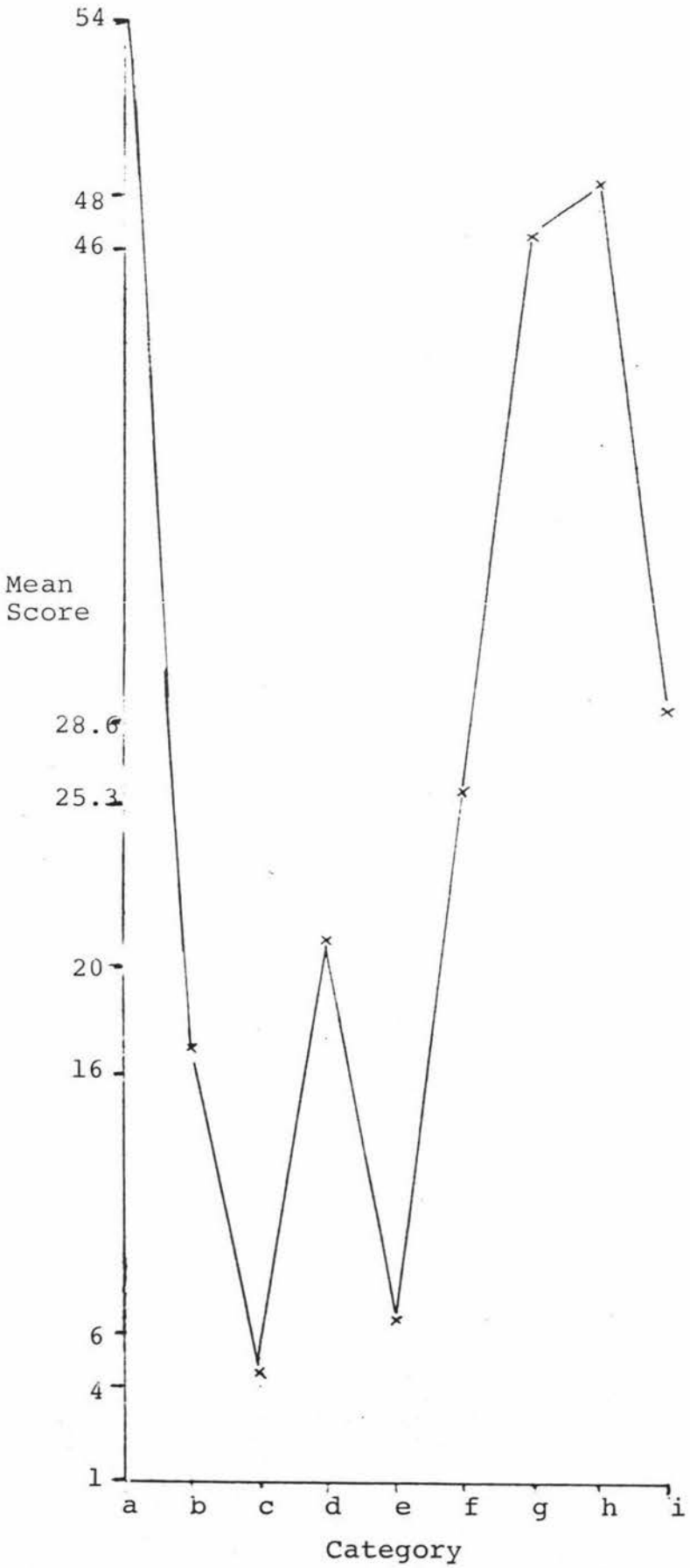


FIGURE 3: Question I - Categories Mean Scores: Total Sample

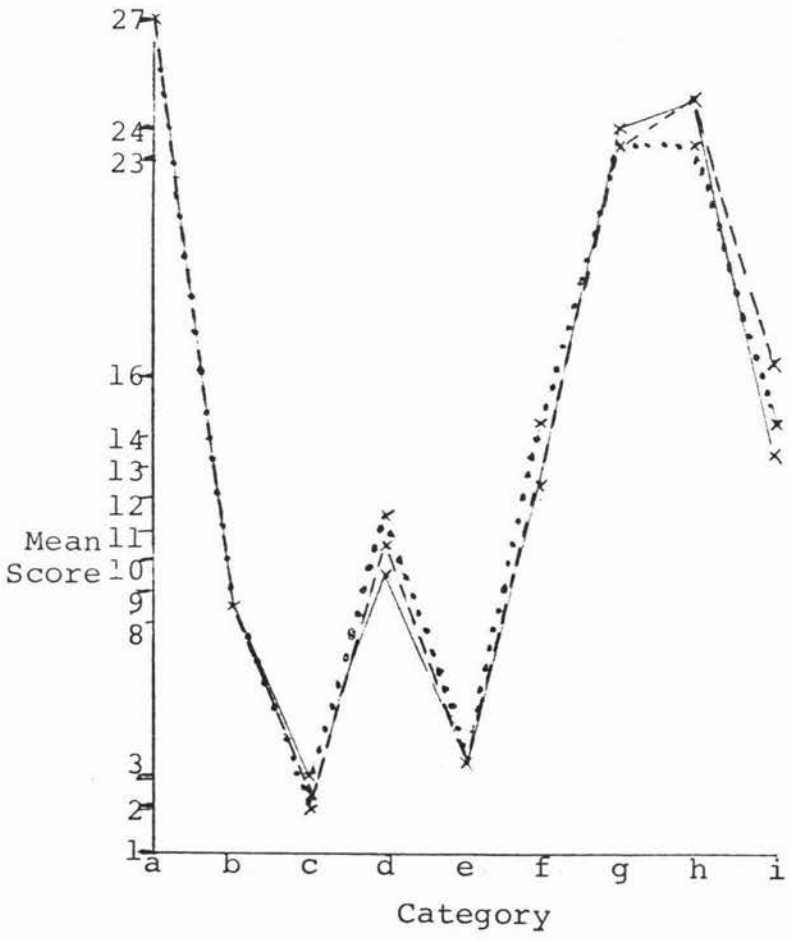


FIGURE 4: QUESTION I - Category Mean Scores x Groups

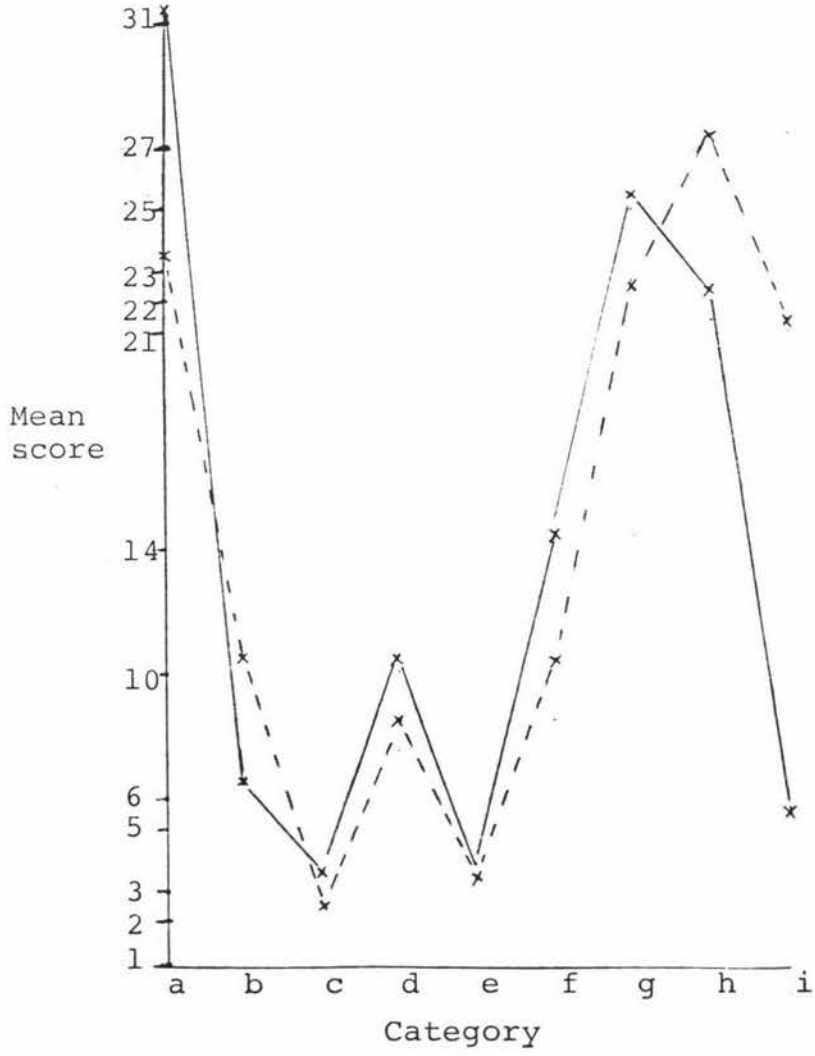


FIGURE 5: QUESTION I - Category Mean Scores: Malay & Chinese Sub-groups

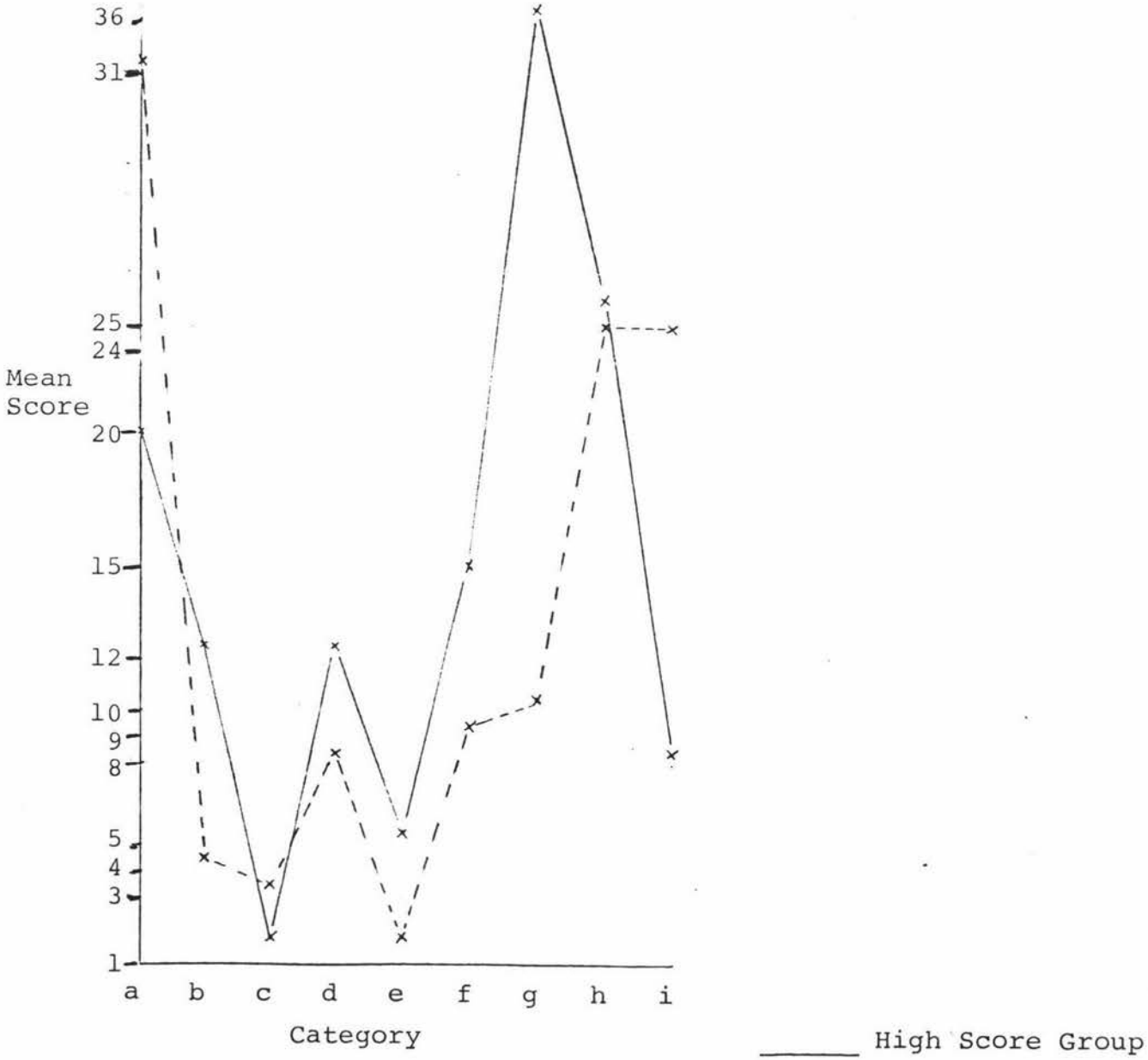


FIGURE 6: QUESTION I - Category Mean Scores: High and Low Score Sub-groups.

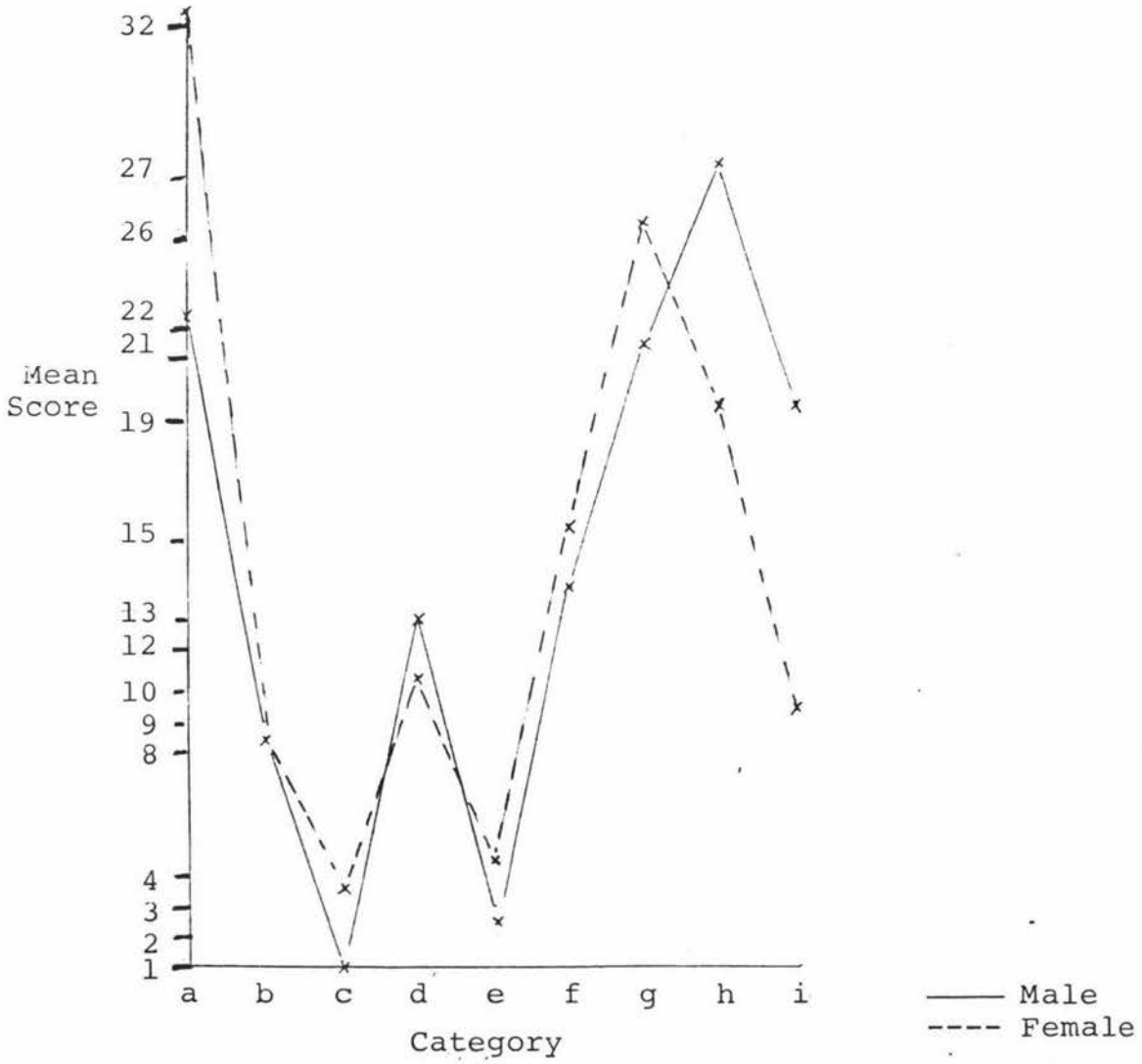


FIGURE 7: QUESTION I - Category Mean Scores: Male & Female Sub-groups

incorrect answers to the duration of the events. There are hardly any race or sex effects discernible in the patterns of students response.

CATEGORY i RESPONSES IN QUESTION I

There are a number of students whose interview responses to question I fell into category i.

Some of the typical examples of students' responses to category i with regard to Interview Question I are given below. Others are available in Appendix 7a.

Example 1.

E. How did you decide that the event of British occupation of Malacca took 10 years?

S. Because the British wanted to stay in Malacca to trade.

E. For ten years?

S. Yes ..... then they went to war.

Example 2.

E. How did you decide that the event of Singapore's separation from Malaysia was 20 years ago?

S. It happened a long time ago. Before I was born ... 20 years I think.

E. How did you know it was 20 years ago?

S. I know.

Example 3.

E. How did you decide that the event of the Prime Minister's visit to China was 1 year ago?

S. They are still talking about it.

E. Who?

S. On ... T.V., the news ....

Table 11 contains the relevant information.
It is noteworthy that many of the responses seem to relate closer to the social and human aspects of the events, rather than the conventional form of measurements, like the calendar years, etc. The power structure, motivation and interest in the events were somehow connected and transformed into length of time - duration.

TABLE 11: QUESTION I: CATEGORY i RESPONSES

Interview Question	Correct/ Incorrect	Type of Event	No. of Students	No. of Students for Category i	%
I	Correct	Distant	40	5.6	14
		Recent	40	4	10%
	Incorrect	Distant	40	8	20
		Recent	40	8	20

DISCUSSION:

The closeness of scores for category h and category g in all the groups strongly suggests a possible relationship between ability to construct the duration of the events and knowledge of the beginning and end dates of the events. On face value, it would seem very easy for students to judge the duration of an event if they knew the dates. However, some students were not able to judge the duration of an event correctly even when they did know the beginning and end dates of the events. Pressumably the problem was mathematical. The students could not add or subtract or, if they could, they could not see the relationship between one and the other. It appears then as if there is a completely separate concept involving number conservation that has to be acquired before children can correctly solve historical duration problems deductively. This also implies that it is important for children to under-

stand the relationship between number conservation and duration. This will have to be learned so that the students recognise the relevant function of transforming numbers in order to interpret the duration of events. However, it does not necessarily follow that every student who correctly judged the duration of events has such 'arithmetic' skills. The slightly higher total score in h (shown in the Figures 4, 5, 6 and 7) suggests that some of the students gave correct durations simply because they had 'learned' the duration of the events and remembered them.

Interestingly, many of the students were inclined to use some sort of measuring scale. Furthermore, correct judgement of historical duration would seem to depend on the relation between the time cues given and the conventional time scale of the calendar year. The closer the time cues used in the construction of duration were to the conventional time scale of the calendar year, the more likely it was that the judgement of the duration would be correct. However it is important to bear in mind that any inferred association between the proximity of relation between time cues and conventional time scales with correct judgement of historical duration is only hypothetical. Further research explicitly designed to test such an association is necessary.

In brief summary, what the study has done is investigate historical knowledge of four events and to examine whether students who said they referred to dates when judging the duration of historical events actually knew the dates, in particular the beginning and end dates of the events. The assumption was that students who: -

(i) knew the dates of the events
(ii) realised the functional relationship between these dates and their relevance to the judging of the durational interval of the events, would
(iii) refer to the dates, and consequently
(iv) estimate the duration correctly.

Part III of the Interview Question was designed to further examine student knowledge of the dates of the four events and in particular, the beginning and end dates of the events.

2. INTERVIEW QUESTION II

Interview Question II was designed to seek preferences for any one of the time cues when the problem confronted was to decide the longest of the two events, distant and recent. These events were the same four events used in Interview Question 1. Consequently, the students do not all have exactly the same events. But each student would have events whose duration they had estimated correctly and incorrectly for both types, distant and recent. These events were presented to the students in two sets. For each specific student then, each set consisted of correctly and incorrectly estimated distant or recent events. The students had to: -

(i) choose the longest of the two events for each set of events, and
(ii) to explain their answers.

Because the students were required to 'compare' two events, Question II can also sometimes be conveniantly referred to as the 'Comparative Question'. The students were required to give verbal answers. They were allowed one or more explanations of their answers and these answers were then coded into the 'time cue' categories. Each answer was awarded a single point. The total score for each of the categories of answers was added and analysed in terms of" -

(i) the two different comparative set of events, and
(ii) in terms of race, sex and score on Group Test.

In this way a profile picture of group responses for all the categories of answers, with regard to the two different types of events could be established. Furthermore race, sex and score (on the group test) differentiations could be established. The data can also be used for comparison with responses to Question I.

For any of the students whose responses were comparable under category i, additional explanations and qualifications were recorded in full. Detailed examples of some of these particular types of responses are to be found on pp 55.

Tables 12 and 13 show in detail group responses to the 2 sets of comparative events. Table 12 provides comparisons of responses made by the groups of students for both Distant and Recent events. Table 13 provides comparisons of responses made by the groups of students based on race, sex and score (on Group Test) sub-groups.

TABLE 12: STUDENT RESPONSES TO THE TWO COMPARATIVE SETS OF EVENTS

Type of Event	No. of Students	No. of correct responses	Category of answers								
			a	b	c	d	e	f	g	h	i
Distant Comparative Events	40	33	8	4	2	4	5	12	3	4	20
Recent Comparative Events	40	38	5	0	0	2	0	16	2	10	13

TABLE 13: RESPONSES TO CATEGORIES OF ANSERS X GROUPS

Groups	No. of Students	No. of correct Responses	Category of ansers								
			a	b	c	d	e	f	g	h	i
Malay	40	36	7	2	0	1	1	14	2	3	21
Chinese	40	35	6	2	2	5	3	14	3	11	12
Male	40	35	5	2	1	3	0	11	4	12	22
Female	40	36	8	2	1	3	4	17	1	2	11
High	40	37	1	2	1	5	3	16	5	9	18
Low	40	34	12	2	1	1	1	12	0	5	15

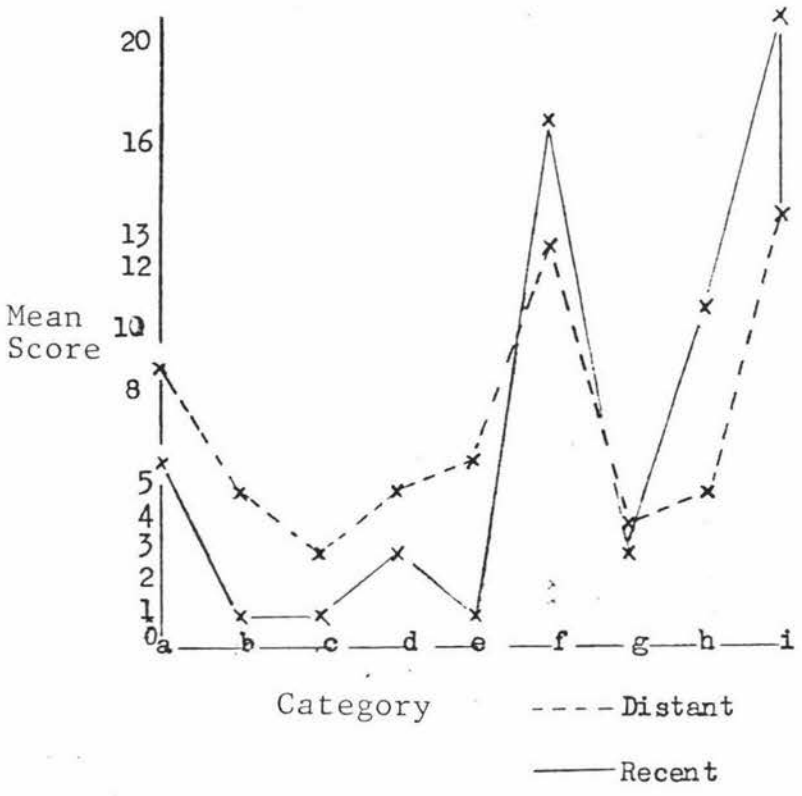
RESULTS

The results which show students responses to the 2 sets of comparative events found in Table 12 and Table 13 were broken down into several graphs to show clearer profiles of group responses. These appear in Figures 8, 9, 10 and 11.

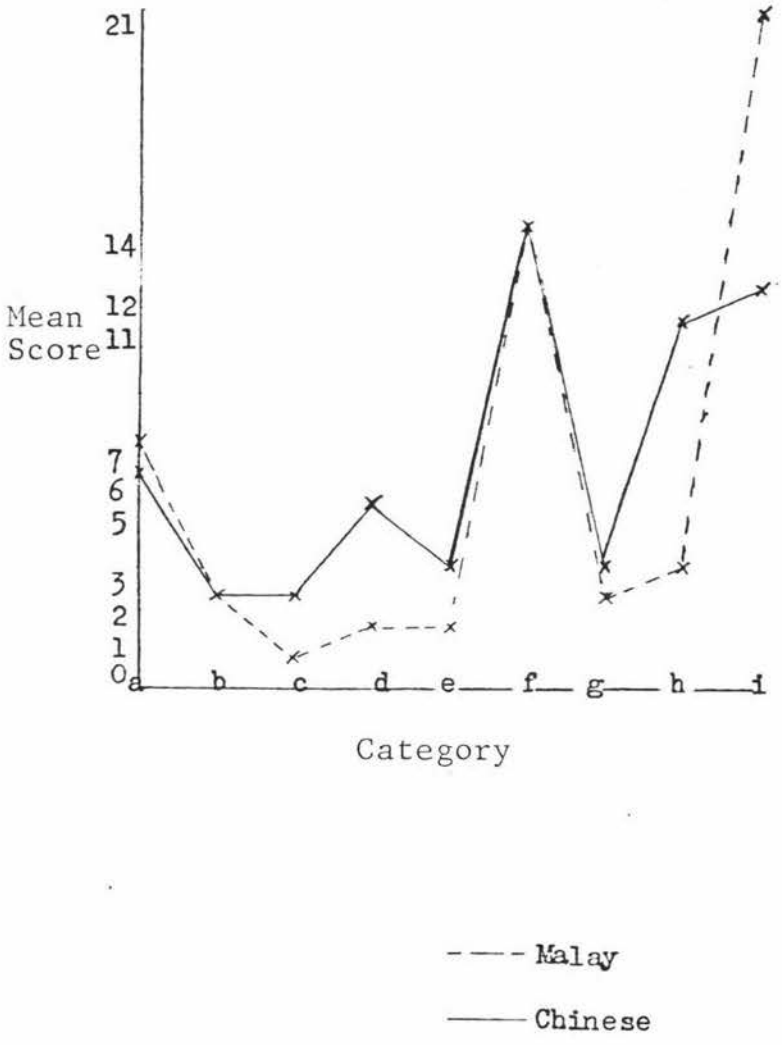
Figure 8 shows the category mean scores for the total sample. The responses to the categories produce a profile similar to that recorded for Question 1 (Figure 3). As in the Question I case, the mean scores for categories c, e, b and d are low. However, noticeable differences from Question I can be found with respect to categories a, f, g, h and i. In Figure 3 (Question I) the mean scores recorded for the total sample on categories f and i are quite high. For the two categories (f and i) the mean scores in the two comparative sets of events of Question II are higher. On the other hand, the mean scores for categories a, g and h are much lower, particularly for category g.

Figure 9 shows Malay and Chinese responses to the 2 sets of comparative events. It indicates a pattern similar to the response in the total sample. The only distinct differences found between the 2 sub-groups seem to be with respect to category d, h and i. Differences in the sub-group responses to the later 2 categories is relatively bigger than for category d. It is the Chinese students who have higher mean scores for category d and h. But the Malay students have a higher mean score for category i. Figure 10 shows male and female sub-group responses to the 2 sets of comparative events. Again the basic character of the profile remains the same. Low mean scores are recorded for categories e, c, b and d, with category d showing the same mean score for both the sub-groups. Slight differences in students responses are found in categories e and g. The female group has a higher mean score than the male group for category e but a lower mean score than the male for category g. However categories h and i show the student sub-group responses to be distinctively different from one another. The male group recorded a much

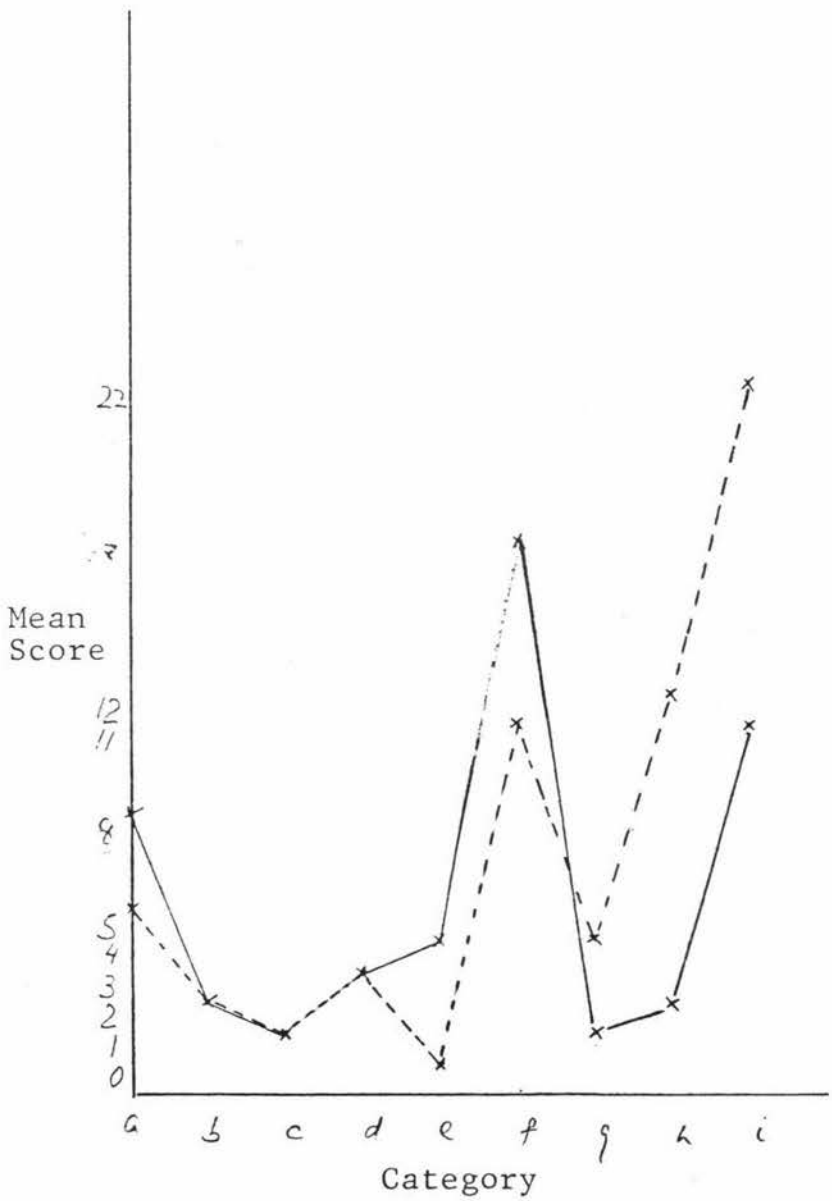
(text continues pp 55).



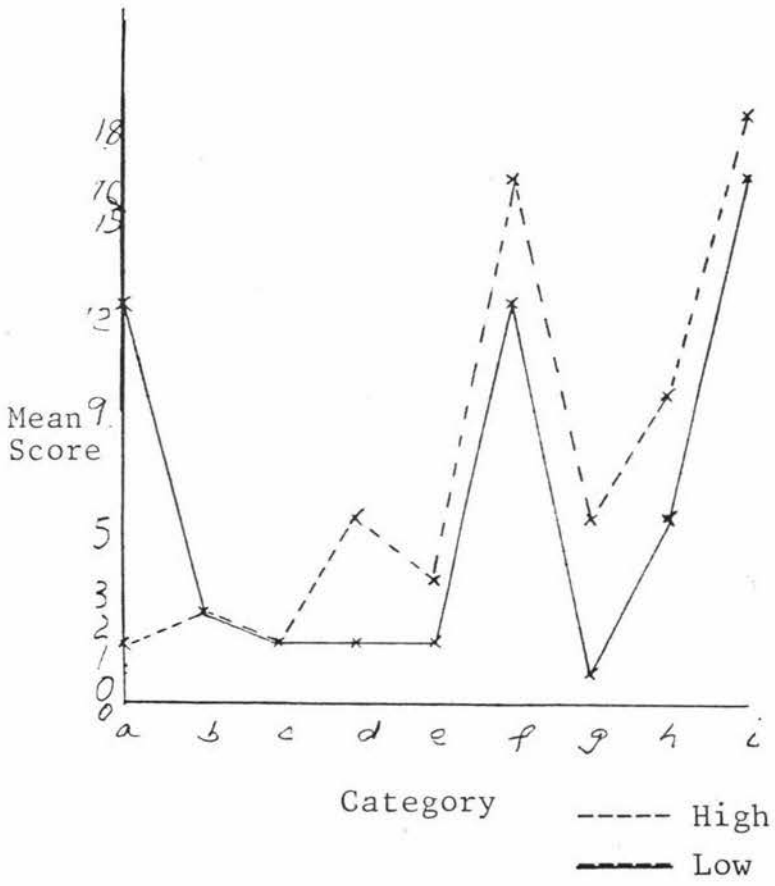
Graph 8: Students' responses to the two comparative sets of events.



Graph 9: Malay and Chinese students' responses to categories of answers with regard to the two sets of comparative events.



Graph 10: Male and female students' response to categories of answers with regard to the two sets of comparative events.



Graph 11: High and low students' responses to categories of answers with regard to the two sets of comparative events.

higher mean score than the female group for both categories. Figure 11 which shows high and low score sub-group responses indicates a profile similar to the category mean scores recorded for Question I and II. There is not a large difference in the two sub-group responses to the categories of answers except for categories d, g and a.. The low score group had a higher mean score than the high score group. However, it is the high score group which has the higher mean score for both categories d and g.

CATEGORY i RESPONSE IN QUESTION II

There are a number of students whose interview responses to question II fall into category i.

Some of the typical examples of students' responses to category i with regard to Interview Question II, the others are available in Appendix 7B.

Example 1.

E. How did you decide that the event of British occupation of Malacca took the longest time?

S. The English were very unpopular ... therefore they took a longer time than the Portuguese.

E. How come?

S. Make friends with the Malays .... this took a long time.

Example 2.

E. How did you decide that the event of British occupation of Malacca took the longest time?

S. English were friendler than the Portuguese, they have a lot of supporters.

E. So?

S. So they stay longer .... they were able to.

Example 3.

S. British were stronger and more influential than any other power.

Example 4.

S. I guess so .... I think so.

Example 5.

E. How did you decide that the school term is longer than your last school holiday?

S. I feel it has been too long already.

E. What is it that you feel has been too long?

S. School term .... it is long.

Table 14 contains the relevant information.

Like many of the student responses to category i in Interview Question I, the responses here seem to relate to social and human aspects of events. However, the students here are more successful in their judgement. One of the reasons for the relative difference in their success, is the difference in the nature of the tasks that the students were required to do. One (Interview Question I) is explicit and stated specific historical events and their durations, while the other (Interview Question II) was relatively more general. Question II required only relatively general answers.

TABLE 14: QUESTION II - CATEGORY i RESPONSES

Interview Question	Comparative Judgement	Type of Event	No. of Students	No. of students for category i	%
II	Comparative judgement set (1)	Distant	40	20	50
	Comparative judgement set (11)	Recent	40	13	32.5

DISCUSSION

The closeness in the students category mean scores in almost all the categories for both the distant and recent comparative events suggests that the children used similar ways for determining the longest of the two events for each set of comparative events. However, differences in mean scores for categories h and i and, to a smaller degree, categories e and b, suggests that students were partial to certain time cues in response to different types of comparative events. For distant comparative events, students seemed to prefer to judge the longest of the two events on the number of items or particular items present in these events. Some students were also prone to judge the duration of distant comparative events according to perceived distance or speed involved. On the other hand, for the recent comparative events, students seem to be relying on some sort of conventional time scale when making judgement as to the longest of the two events. There was only small numbers of students who referred to beginning and end dates of the events.

High scores for category i in both comparative sets of events suggests an inclination to identify in some way with the character of the event itself. Power, motivation etc... become kinds of the measuring scales according to which the duration of the events are determined. Like the responses for Interview Question I, positive attribution of such characteristics are relative to the length of time in which the events are expected to take. For example, the stronger the power is perceived by the student, the longer the time is expected to be. More than 50% of the students whose responses full into category i explained that the British stayed in Malacca longer than the Portuguese simply because the British were considered to be more powerful and influential than the Portuguese or the Malays.

Overall it would seem that there was no significant variation given of ways in which students responded to Question I and Question II. In fact the four categories b, c, d and e have

been consistently low in their mean scores throughout. However, results for Interview Question I indicated that students who knew the dates also tended to know the duration. This inference is based on the closeness of the mean scores for categories g and h. However, children seem to be more successful in judging the longest of the two events for both distant and recent comparative events than judging the exact duration of the events (Interview Question I) without the reference to specific dates of the events. The low mean score for category g suggests that students could estimate the duration without the reference to dates. On the other hand, perhaps they could not remember the beginning and end dates for each of the comparative event sets, or they failed to synchronise the dates and thus failed to see their relevance.

3. INTERVIEW QUESTION III

From the results of Interview Question I, it was concluded that there was a relationship between knowing some dates and the ability to understand the duration of the events. However this apparently depends on the students not only realizing the relationship but also in fact using the dates to judge the duration of the events. Presumably it would be easier for students to judge the duration of an event if they knew the beginning and end dates of the particular event. Interview Question II was closely related to Interview Question I.

Interview Question III was specifically designed to test further the connection between knowledge of dates and durational judgements. In particular it examined the students' knowledge of the beginning and end dates of the four events. Presumably, if the total number of students' scores in the Interview Question III are close to categories g and h in the Interview Question I, then there is a very high possibility that students actually referred to dates of the events, and consequently gave the correct judgement.

In the interview, students were required to give both the beginning and end dates of all the four events, verbally. Each correct date given by the students was awarded a single point. The total scores for both the beginning and end dates of the events were analysed in terms of each group: -

(i) race
(ii) sex and
(iii) score on the group test.

The average total scores for the three groups were also compared with the number of Question I responses in category g.

In this way the total number of responses which could have entailed specific reference to beginning and end dates of the events (when judging the duration of historical events) is accounted for.

RESULTS AND DISCUSSION

The tables (see pages 61 and 62, tables 15, 16 and 17) show that the total scores for both the beginning and end dates of the events are slightly less than the total number of scores in category g (Interview Question I). This means that there were some students who said they referred to dates but did not actually do so. If they did, it was not the beginning and end dates of the events but possibly to other dates, no doubt thought to have some relevance to the judgement. There were also some students who gave incorrect dates for either the beginning or end dates of the events or both. This could account for the small number of students who failed to judge the duration of events correctly even when they said they had referred to dates. Failure to judge the duration correctly could be caused by failure to synchronize the beginning and end dates of the event. The differences between the total score for the beginning and end dates of the events are small, nevertheless it would be unlikely that students would be able to judge the duration of any event without any basis of an interval, either concrete or abstract. By definition, each event would have to have the beginning and ending 'sites' in order for it to have any duration.

More than 90% of the students who referred to category g in their judgement on duration of historical events actually knew the beginning and end dates of the events correctly. The majority of this same group stated that they realized the relevance of dates, in particular the beginning and end dates of an event, and they were able to transform them into historical durations.

One aspect of the results that is particularly noteworthy is that only a slight difference was shown between scores recorded on recent events and scores recorded on distant events. Some of the students whose responses fill in category g (reference to dates) did not know the dates correclty. There was however, evidence of greater accuracy of knowledge when recent rather than distant events were involved.

One would think that with recent events it would be easier to judge the duration of the events without having to know the exact dates of when they started or ended. Students presumably can reconstruct the duration of the events by relying on their own experiences, especially when the events took place during their life times. On the other hand distant events might seem too remote from their life experiences and would probably entail some form of measuring scale, like the date of the event itself.

Group differences account for only a small amount of the variance. The differences are mainly between the high and low score groups. This is because the high score group gave more correct judgements of duration than the low score group. The main difference was to be found in the number of correct responses falling into category g.

The following tables give details of group responses with regard to both the correct and incorrect judgement of the duration of the four events.

TABLE 15: TOTAL SCORES OF MALAY AND CHINESE STUDENTS' KNOWLEDGE OF BEGINNING AND END DATES OF THE FOUR EVENTS AND NUMBER OF STUDENTS WHO REFERRED TO CATEGORY G, IN INTERVIEW QUESTION I

Group	Correct/ Incorrect	Type of Event	No. of Students	No. of Students in Category g	Students knowledge of date Beginning	End
Malay	Correct	Distant	20	10	7	5
		Recent	20	10	12	12
		Total	40	20	19	17
	Incorrect	Distant	20	0	1	2
		Recent	20	2	0	0
		Total	40	2	1	2

Cont'd..

TABLE 15: CONTINUED

Group	Correct Incorrect	Type of Event	No. of Students	No. of Students in Category g	Students knowledge of date	
					Beginning	End
Chinese	Correct	Distant	20	12	12	12
		Recent	20	8	13	13
		Total	40	20	25	25
	Incorrect	Distant	20	0	0	0
		Recent	20	5	0	0
		Total	40	5	0	0

TABLE 16: TOTAL SCORES OF HIGH AND LOW SCORE GROUPS OF STUDENTS' KNOWLEDGE OF BEGINNING AND END DATES OF THE FOUR EVENTS AND THE NUMBER OF STUDENTS WHO REFERRED TO CATEGORY G, IN INTERVIEW QUESTION I

Group	Correct Incorrect	Type of Event	No. of Students	No. of Students in Category g.	Students knowledge of date	
					Beginning	End
High	Correct	Distant	20	17	15	14
		Recent	20	13	20	20
		Total	40	30	35	34
	Incorrect	Distant	20	0	1	2
		Recent	20	6	0	0
		Total	40	6	1	2
Low	Correct	Distant	20	5	4	4
		Recent	20	5	5	5
		Total	40	10	9	9
	Incorrect	Distant	20	0	0	0
		Recent	20	0	0	0
		Total	40	0	0	0

TABLE 17: TOTAL SCORES OF MALE AND FEMALE STUDENTS' KNOWLEDGE OF BEGINNING AND END DATES OF THE FOUR EVENTS AND THE NUMBER OF STUDENTS WHO REFERRED TO CATEGORY G, IN INTERVIEW QUESTION I

Group	Correct/ Incorrect	Type of Event	No. of Students	No. of Students in Category g	Students knowledge of date	
					Beginning	End
Male	Correct	Distant	20	9	9	9
		Recent	20	8	12	12
		Total	40	17	21	21
	Incorrect	Distant	20	0	1	2
		Recent	20	4	0	0
		Total	40	4	1	2
Female	Correct	Distant	20	12	10	9
		Recent	20	10	13	13
		Total	40	22	23	22
	Incorrect	Distant	20	0	0	0
		Recent	20	3	0	0
		Total	40	3	0	0

4. INTERVIEW QUESTION IV AND V

Introduction

Interview Question IV and V were specifically designed to probe the ways in which students construct the duration of historical events. They apply to specific conditions which were: -

(i) do not know the beginning and end dates of the events
(ii) do know the beginning and end dates of the events.

They are based on the assumption that students will use the dates of the events in their judgement of the duration if they know them. Obviously the questions are bounded by the assumption that there is a functional relationship or connection between judgement on duration of historical events and the beginning and end dates of the events.

But the main concern here is with the 'how' and 'why' of the questions, and with intention of finding the ways in which children actually construct the duration of historical events. Therefore students were encouraged to explain their answers irrespective of whether they had given a positive or negative response to the question.

The Interview Questions are: -

(i) Interview Question IV: 'If you do not know the beginning and end dates of the event (any event) can you work out how long an event takes?'

(ii) Interview Question V: 'If you know the beginning and end dates of the event (any event) can you work out how long an event takes?'

First, the students were required to give a simple 'yes' or 'no' answer to each of the questions. Following which they were asked to explain their responses.

For every 'yes' answer, a single point was given to the student. These points were analysed in terms of the groups

(i) race

(ii) sex, and

(iii) score in the group test to see the groups' effect on the results. Explanations of their answers were recorded in full. Some of the typical examples of these explanations are also discussed.

INTERVIEW QUESTION IV

In Interview Question IV, the students were asked whether they can judge the duration of an event (any event) if they do not know the beginning and end dates of the events. If they said, 'yes' the children were asked to explain 'how'. On the other if they said 'no', then they were asked to explain 'why not'?'

RESULTS

Table 18 shows that 45% of the students could judge the duration of an event without the knowledge of the beginning and end dates of the event. This seems to be true for all the three groups (race, sex and score). A slightly higher percentage of the same groups of students think otherwise (about 5% more).

TABLE 18: GROUPS' SCORE FOR BOTH THE 'YES' AND 'NO' RESPONSES TO INTERVIEW QUESTION IV

Grouping		No. of Students	Yes	%	No	%
Race	Malay	20	11	55	9	45
	Chinese	20	7	35	13	65
	Total	40	18	45	22	55
Sex	Male	20	8	40	12	60
	Female	20	10	50	10	50
	Total	40	18	45	22	55

TABLE 18: CONTINUED

Grouping		No. of Students	Yes	%	No	%
Score	High	20	13	65	7	35
	Low	20	5	25	15	75
	Total	40	18	45	22	55

Below are some of the typical examples of students' explanations to the 'yes' and 'no' responses with regard to Interview Question IV.

Response	Question	e.g.	Explanations
Yes	How	1	'it has to depend on the type of events, e.g. a conquest takes longer time than a war'
Yes	How	2.	'depending on the time the event happened. In modern time, an event probably will take a shorter time than when it happened in the olden days'.
Yes	How	3.	'the power or strength of the party involved will determine the length of time an event takes'.
Yes	How	4.	'depends on the intent of the party or power involved. Whether they wanted to stay in the country'.
No	Why not	5.	'Impossible without the knowledge of the dates of the event.'
No	Why not	6.	'I don't know'.
No	Why not	7.	-Negative - no response

DISCUSSION

From the 'yes' responses, the explanations of the judgement of duration of historical events seem to depend for some children upon the event itself rather than the interval time. Certain characteristics of the event and its activities are assumed to bear a causal relationship to duration of the event (see examples of students' explanations on page 66). Motivation, type of activities and power are among the characteristic aspects of a historical event that are considered as relevant in judging the duration of the event. Furthermore, positive attributes of these aspects of the historical event tended to have a positive effect in increasing the interval of the duration. Therefore, a strong or influential power will mean a longer duration, than if it were weak or unpopular.

Some children could not explain their responses satisfactorily while a few refused to say anything at all.

INTERVIEW QUESTION V

In Interview Question V the students were asked whether they could judge the duration of an event (any event) if they knew the beginning and end dates of the events. If they said 'yes', the students were asked to explain 'how'? On the other hand if they said 'no', then they were asked to explain 'why not?'.

RESULTS

Table 19 shows that 90% of the students could judge the duration of an event if they knew the beginning and end dates of the event. This is true for all the three groups (race, sex and score). There are only 10% of the students who think otherwise.

TABLE 19: GROUPS' SCORES FOR BOTH THE 'YES' AND 'NO' RESPONSES TO INTERVIEW QUESTION V

Grouping		No. of Students	Yes	%	No	%
Race	Malay	20	18	90	2	10
	Chinese	20	18	90	2	10
	Total	40	36	90	4	10
Sex	Male	20	19	95	1	5
	Female	20	17	85	3	15
	Total	40	36	90	4	10
Score	High	20	19	95	1	5
	Low	20	17	85	3	15
	Total	40	36	90	4	10

Below are some of the typical examples of students' explanations to the 'yes' and 'no' responses with regard to the Interview Question V.

Response	Question	e.g.	Explanations
Yes	How	1.	'by subtracting the big number from the small number'
Yes	How	2.	'by subtracting the number at back or the end date from the number in front or the beginning for the event'
Yes	How	3.	'by counting the date of the event, starting with the beginning date to the end date of the event'.
Yes	How	4.	'I don't know'
No	Why not	5.	'I don't know'
No	Why not	6.	-Negative - no response

DISCUSSION

Table 19 shows a large percentage of the students who could judge the duration of an event (any event) if they knew the beginning and end dates of the event. However, many of them differ in the ways in which the work out their answers. Some subtract and others simply add the number of years between the interval dates of the events. See examples of students' explanations on page 68. This in fact required some skill and knowledge, apart from realizing the functional association or connection between dates of the event and the duration.

However some could not explain, or simply refused to give any explanations for their answers.

CHAPTER V

SUMMARY AND CONCLUSION

This chapter presents some of the major issues and findings of the study, and offers several personal comments on the issues themselves.

The bulk of the study was mainly intended to find the ways and means by which children from two ethnic groups construct and judge the duration of distant and recent historical events. The method employed was based upon the assumption that: -

(1) There is a functional relationship between 'time cues' and the judgement of the duration of historical events.

(2) Any intervals are only relative to the successive beginning and end dates (order) of the events.

The investigation was carried out in two separate phases involving a group test and interviews. The interviews (second phase of the investigation) apart from probing into the ways children reported their actual construction of the durations, closely examined the relationship between duration judgements and time cues. In short, it was the application of time cues in relation to duration judgements that was the primary concern.

In Chapter IV, five separate problems were put to the children. It was hoped that the findings from the five separate problems would provide evidence consistent to one or more of the other problems.

It has already been found that duration judgements of young children take into consideration cues such as distance, speed, etc (e.g. Levin 1977, Piaget 1969). All these interfering cues share the characteristic that they are logically relevant to time, or at least they are conceived to be relevant by the children.

However, the causal inferences of time cues to the judgement of historical events is mediated by students' recognition and interpretation of time cues themselves. Whether the impact of their recognition could enable them to make precise judgements on the duration of the events thus depends on some generative mechanism connecting them together. This in turn depends on several conditions. Generally these would involve the stimulus conditions as well as the organism condition. Ultimately, what and how children perceived the stimulus (time cues) is relative to what they learned and experienced.

In the findings relationship between category g (reference to dates) and the duration of the events, and consequently the success on duration judgements, raises the possibility that duration is predominantly explained by reference to the beginning and end order of the events. Findings from interview question III indicate that more than 90% of the students who referred to category g knew the duration of the event in question I. It was also found that an equally large number of students said they could judge the duration of an event (any event) if they knew the beginning and end dates of the event (interview question V).

The latter issue depends on the subjects grasp of the numerical and spatial qualities of the events. Some sort of numerical displacement between the beginning and end order of the event must have taken place, involving the principle of mathematical addition or subtraction. Superficially these skills may appear simple and easy to master, but they are not. Firstly, the children have to understand that time itself is part of that arithmetic dimension and probably the most difficult to abstract. It was shown earlier that there are a number of different mathematical approaches that affect the ability to form abstractions. The capability to judge historical time thus would depend on children acquiring the necessary basic mathematical skills and their comprehending the relationship to duration.

Failure to give the correct judgements on duration is caused not only by wrong and inadequate dates but failing to transform these successive beginning and end dates into duration. Some children simply could not see the relationship or did not have the required skill to determine it in the appropriate manner.

However, as mentioned earlier, vulnerability of duration judgements to time cues emerges consistently together, and sometimes is more apparent to students than succession (dates) order of the events. These in turn are based on the perceptual elements of the events.

The findings of the present study revealed some confusion between certain types of time cues that are assumed to bear a causal relationship to duration. Speed, distance and density (number of items in event) were seen as generative factors which could not only be transformed into duration but in fact to some determined the length of the duration itself. Any increases of speed, distance and density, generally resulted in the increase of the duration.

Earlier studies (Piaget 1969; Levin 1977) suggest that children tend to become more attracted to such cues as speed, distance etc. than those of beginning and end dates of the event. Interestingly, this is not true of the present study. Moreover, many of the students who used such cues gave incorrect duration judgements as well.

But the problems presented in the present study were not quite the same. In the first place, the stimulus (time cues) were not presented directly as in the former studies. The time cues here have been conceptualized by the individuals themselves at some stage of their lives. They are now required to recapture mentally these concepts and use them to solve specific problems. Therefore the expected generative value of these time cues in relation to duration judgements is preconditioned by the child's memory (apart from under-

standing these concepts) of the time elements within the events. On the other hand, the misconceived notion of time elements within the event can lead to some distortion of duration judgements. For example, more distance or density do not necessarily mean more time and consequently a longer duration. Distance and density are not stable factors and have to be considered only in relative terms, and in particular to the relationship of time to speed. That is, the faster the speed the shorter the time length of duration. In fact, the present study showed a tendency for children's duration judgements to be influenced by the actual proximity of these time cues to a more definite form of time measurement e.g. calendar time. Furthermore, it seemed that the successive beginning and end dates of the events were the most popular and successful time cues of them all.

However, the questions brought to light several new and interesting cues that are not in the same category as the others mentioned in the study. Nevertheless, they are thought to exert an effect upon duration judgements. They are elements that are related and commonly associated with history rather than time. They involve the political and social structure which include human motivations, aspiration and hopes. In interview question IV, it was found that 45% of the students said that they judge the duration of historical events in that manner. In fact, with regard to certain problems (specifically, comparative events - interview question II) students did not only seem to have the ability to present a greater variety of historical elements or characteristics, but were relatively successful as well.[1]

Any political or social elements that appeared to influence judgements of duration, seem to be those inherent in the events themselves and not in the individuals own social or cultural background.

1. See students' explanations for their answers under category i (others) for interview question I, II and inteview question IV.

The study showed no significant race or sex effects in any of the results, except for the Chinese girls who did extremely well in the group test. This could mean that they were more mathematically inclined than the other three groups, or they had very good memory for dates, or both.

With regard to the two types of events, distant and recent events, not much difference was exhibited between them as far as duration judgement is concerned. Students did tend to refer to dates of the events for a distant event much more readily than for a recent event. Interview question III shows that more students said they referred to category g for distant events than students who actually knew the beginning or end dates of the events. Presumably they must have referred to some other dates (other than the beginning and end dates of the event), or strongly felt that the answer to the duration judgement somehow lay with the dates. On the other hand, it was found that it was just the opposite with the recent events. There were more students who knew the beginning and end dates of the events than students who referred to them in their duration judgements of the events. Otherwise, the earlier findings, with regard to groups' responses to categories of answers stood as they were, irrespective of the type of events.

It is hoped that the findings of this investigation will help lead to better learning and teaching of history, particularly with regard to duration judgements. It is quite obvious from the findings of the study that there are two separate dimensions involved, time and history. However these two can be successfully incorporated. Both time and historical elements can be extracted and transformed into duration as required. But first they have to be learned. Teachers can help children to create the necessary conditions for the development and progress learning of the 'historical and temporal' framework with regard to duration judgements. This could perhaps be done through developing the historical elements of the events in relation to duration judgement and history in general. The tedious task of learning and teaching of dates and memorising can then be minimised.

APPENDIX I
QUESTIONNAIRE

Name .....
Date of Birth .....
Race .....
Sex .....
School .....
Standard .....

Below are listed a number of events some of which took place in your life time and some of which occurred before it. For every question you should write down how long each event lasted. Every question therefore starts with 'How long ....'.

Please try to answer each question as best as you can and only miss the ones for which you really have no idea.

Events	Answers
How long was Malacca ruled by the Sultans?	.....
How long is it until the next Monkey Year?	.....
How long did the Portuguese occupy Malacca?	.....
How long before the next Chinese New Year?	.....
How long was Malacca under (the rule) of Parameswara?	.....
How long will it be before you become a hundred years old?	.....
How long ago did the present Prime Minister, Datok Hussein Onn go to China?	.....
How long was Malacca under (the rule) of Sultan Mahmud Shah?	.....
How long is it since Singapore separated from Malaysia?	.....
How long was the first English School built in Malaysia?	.....
How long have you been alive?	.....

How long ago did the legendary Malay hero, Hang Tuah live? .....

How long was the reign of Sultan Abu Bakar in Johore? .....

How long did the British occupy Melacca? .....

How long was the First Larut War in Perak? .....

How long ago did the Chinese come to Malaysia? .....

How long ago was rubber introduced into Malaysia? .....

How long did the Second World War last? .....

How long did the British occupy Pulau Pinang? .....

How long were the Malay States under the British Residential System? .....

How long was St. Settlement under the East India Company? .....

How long is it before the next school holiday? .....

How long did the Bugis occupy Johore? .....

How long were the Malay States under the Federation (under the British rule)? .....

How long were the British in Perak? .....

How long has your mother been alive? .....

How long was the foreign rule in the Malay States? .....

How long ago were the British War Ships, the Prince of Wales and the Repulse sunk? .....

How long has it been since the National System of Education was introduced in all schools in Malaysia? .....

How long ago were Railway Trains introduced into Malaysia? .....

How long ago was Singapore ruled by the British? .....

How long ago was the last National Election? .....

How long will a person born on the last Hari Raya be alive today? .....

How long ago was the death of Tuanku Yahya Putra ibni Al-Marhom Sultan Ibrahim? .....

How long was the Japanese Occupation of Malaya? .....

How long ago did the 'Boat People' from Vietnam arrive in Malaysia? .....

How long since Malaysia became independent? .....

How long were the British in Pahang? .....

How long ago were you in Standard Three? .....

How long did the Russo-Japanese War take? .....

How long ago was tin discovered in Malaysia? .....

How long is the Ramadan? .....

How long did the First Malaysia Plan last? .....

How long ago was the Thomas Cup taken by the Indonesian Players? .....

How long was the Pahang Civil War? .....

How long ago did Sabah and Sarawek become apart of Malaysia? .....

How long ago since the present Yang diPertuan Agong was elected to the throne? .....

How long ago was your last school sporting event? .....

How long has your father been alive? .....

How long before you leave school? .....

How long ago did the school open for the second term? .....

How long ago was the Suez Canal opened? .....

How long was the First World War? .....

How long ago did the South Vietnamese lose to the North Vietnamese in the Vietnam War? .....

How long was your last school holiday? .....

How long will it be before your 21st birthday? .....

How long ago was Islam introduced into the country? .....

APPENDIX 2

INTRODUCTION TO THE QUESTIONNAIRE

We are asking you to help with a piece of research that will enable us to appreciate better how children understand history. Although the questions we want you to answer look rather like a test question, this is not a test and your results will not go into your school records. Nevertheless we would like you to consider each question very carefully and answer it as best you can.

Thank you for helping us

APPENDIX 3

INDUCTION TO INTERVIEW QUESTIONS

We have selected you for the interview because your answers to our history questions (group test) were very interesting and we think that you may be able to help us to learn more about how children understand history.

I would like you answer some questions on how you think about the historical events. There are no right or wrong answers. What you say is quite private to you and me.

Alright?
Would you like me to explain once again?
Ready?
Good.

(No matter what the responses are to the first question, the students were all given the privilege of choosing whether they want the whole induction again or not. If they do, then it will be read again. Otherwise, the interview began immediately, but only when they were ready!)

APPENDIX 4

INTERVIEW QUESTIONS

PART I : 1. How do you decide event ..(1).. lasted .....?

2. How do you decide event ..(2).. lasted .....?

3. How do you decide event ..(3).. lasted .....?

4. How do you decide event ..(4).. lasted .....?

PART II : 1. Which of these two events (1) and (3) took the longest time?

2. How do you decide that event (1) / (3) is the longest?

3. Which of these two events (2) and (4) took the longest time?

4. How do you decide that event (2) / (4) is the longest?

PART III: 'I'm going to ask you to give me the beginning and end dates of the four events that were mentioned in interview question Part 1'.

(All the questions started with) 'Do you know the beginning date of event ....?.

'Do you know the end date of event .....?'

PART IV : 'If you do not know the beginning and end dates of the event (any event) can you work out how long an event takes?'.

(If Yes) 'How?'

(If No) 'Why not?'

PART V : 'If you know the beginning and end dates of the event (any event) can you work out how long an event takes?'

(If Yes) 'How?'

(If No) 'Why not?'

Thank you for helping me

APPENDIX 5

ANSWER SHEET

NAME .....

SCHOOL ..... STD ...

PART 1 AND II: -

	1	2	3	4	5	6
a. arbitrary - unscorable	( )	( )	( )	( )	( )	( )
b. number of items	( )	( )	( )	( )	( )	( )
c. expected duration of particular item/s	( )	( )	( )	( )	( )	( )
d. perceived distance of activities in event	( )	( )	( )	( )	( )	( )
e. perceived rate/speed of activities in event	( )	( )	( )	( )	( )	( )
f. consistent interval in calendar year	( )	( )	( )	( )	( )	( )
g. relevent to date/s	( )	( )	( )	( )	( )	( )
h. knowledge of the correct duration of an event	( )	( )	( )	( )	( )	( )
i. others	( )	( )	( )	( )	( )	( )

---

1 2 5

---

3 4 6

PART III: -

Put a ( ) for a Yes and correct answer and ( ) for incorrect answer.

B.D.1 ( ) B.D.2 ( ) B.D.3 ( ) B.D.4 ( )

E.D.1 ( ) E.D.2 ( ) E.D.3 ( ) E.D.4 ( )

PART IV: - (Cancel the irrelevant answer)

Yes - how / No - why not?

PART V: - (Cancel the irrelevant answer)

Yes - how / No - why not?

APPENDIX 6A

SCHOOL: Canossian Convent (Primary)

TOTAL NUMBER OF STANDARD SIX: 2 (Blue and Red)

TOTAL NUMBER OF STUDENTS:

TYPE OF SCHOOL: National Type School (Urban)

GRADE: B

HISTORY TEACHER: Misnah Lamin - College Trained - 2 yrs exp.
23 years old

Class	Malay		Indians		Chinese		Others		Total in Class	
	M	F	M	F	M	F	M	F		
Red		8		5		12			20	25
Blue		6		9		11			17	26
Total		14		14		23			37	51

NUMBER OF STUDENTS IN STANDARD SIX ACCORDING TO RACE AND SEX

	1.05	1.45	2.30	3.10		3.20	4.00	4.40	5.20
Monday					B				
Tuesday					R	B	R		
Wednesday					E				
Thursday		R			A	B			
Friday					K				

HISTORY TIME-TABLE FOR BLUE AND RED CLASSES

APPENDIX 6B

SCHOOL: Tengku Mahmood II (Kluang)

TOTAL NUMBER OF STD. SIX: 4 (Blue, green, red and yellow)

TOTAL NUMBER OF STUDENTS:

TYPE OF SCHOOL: National Type School (Urban)

GRADE: A

HISTORY TEACHER: Micheal Soosay - College Trained - 17 yrs exp. - 43 yrs old (Teachers all the four classes)

Class	Malay		Indians		Chinese		Others		Total in Class	
	M	F	M	F	M	F	M	F		
Red	18	10	6	2	8	-	-	-	36	44
Blue	15	14	3	1	7	3	1	-	39	44
Green	13	14	9	2	1	2	-	-	30	41
Yellow	15	17	7	3	2	1	-	-	35	45
Total	61	55	25	8	18	6	1	0	140	174

NUMBER OF STUDENTS IN STANDARD SIX ACCORDING TO RACE AND SEX

Time	7.30	8.10	8.50	9.30	10.10		10.25-11.05-11.45 12.25-1.05			
Sunday						B		H		
Monday		Y				R		M		
Tuesday		K	B			E		K	H	
Wednesday						A				B
Thursday				K		K		B	H	M

HISTORY TIME TABLE FOR BLUE, GREEN, RED AND YELLOW CLASSES

APPENDIX 6C

SCHOOL: Jubli Intan School; Rengam, Kluang
TOTAL NO. OF STD. SIX: 2 (Blue and yellow classes)
TOTAL NO. OF STUDENTS:
TYPE OF SCHOOL: National Type School (Rural)
GRADE: B
HISTORY TEACHER: Tan Cheng Ming - College Trained - 6 years experience - 38 years old

Class	Malay		Indians		Chinese		Others		Total	
	M	F	M	F	M	F	M	F		
Blue	11	11			3				18	44
Yellow	17	12				3			29	45

TOTAL NUMBER OF STUDENTS IN STANDARD SIX
ACCORDING TO RACE AND SEX

Time	7.30-8.10-8.50-9.30-10.10					10.25-11.05-11.45-12.25-1.05			
Sunday			B		B				
Monday		Y			R				
Tuesday		B			E			Y	
Wednesday					A				
Thursday		B	Y		K				

HISTORY TIME TABLE FOR BLUE AND YELLOW CLASSES

APPENDIX 6D

SCHOOL: Tengku Mahmood I (Kluang)

TOTAL NUMBER OF STD. SIX: 4 (Blue, green, red and yellow)

TOTAL NUMBER OF STUDENTS:

TYPE OF SCHOOL: National Type School (Urban)

GRADE: A

HISTORY TEACHER:
1. Lim Ban - College Trained - 14 yrs experience - 34 years old
2. Osman Saat - College Trained - 13 years experience - 38 years old

Class	Malay		Indian		Chinese		Others		Total in Class	
	M	F	M	F	M	F	M	F		
Red	12	11	9	1	6	0			29	39
Blue	16	14	4	2	4	4			38	44
Green	15	17	6	2	3	0	1		34	44
Yellow	16	11	6	3	3	1	1		31	41
Total	59	53	25	8	16	5	2		132	168

NUMBER OF STUDENTS IN STANDARD SIX ACCORDING TO RACE AND SEX

Time	1.05	1.45	2.30	3.10		3.20	4.00	4.40	5.20
Sunday		G			B		R		B
Monday	B		R	G	R				Y
Tuesday					E	Y&R		G	
Wednesday		B			A				
Thursday	Y				K				

HISTORY TIME TABLE FOR BLUE AND YELLOW CLASSES

APPENDIX 6E

SCHOOL: 3rd Mile School

TOTAL NUMBER OF STANDARD SIX: Two

TOTAL NUMBER OF STUDENTS:

TYPE OF SCHOOL: National Type School (Urban)

GRADE: B

HISTORY TEACHERS:

1. P. Senah Saat - College Trained 4 yrs exp. 24 yrs old
2. W.K. Kamisah Taliu - College Trained - 2 yrs exp. - 23 yrs old

Class	Malay		Indian		Chinese		Others		Total in Class
	M	F	M	F	M	F	M	F	
A	20	16	3	1	0	2	0	0	41
B	12	14	1	3	1	2	0	0	43
Total	42	30	4	4	1	4	0	0	84

NUMBER OF STUDENTS IN STANDARD SIX ACCORDING TO RACE AND SEX

Time	7.30-8.10	8.10-8.30	8.30-9.30	9.30-10.10		10.25-11.05	11.05-11.45	11.45-12.25	12.25-1.05
Sunday					B	A			B
Monday					R				
Tuesday		B			E		A		
Wednesday					A				
Thursday						B			A

HISTORY TIME TABLE FOR A AND B CLASSES

APPENDIX 7A

EXAMPLES OF STUDENTS' RESPONSES TO CATEGORY I WITH REGARD TO INTERVIEW QUESTION I

1. E. How did you decide that the event of British occupancy of Malacca took ___ years?
   S. The British defeated the Portugese.
   E. So?
   S. This took a very long time.

2. S. There was a war between the English and the Dutch.
   E. .... yes ....
   S. And there was a war with the Malays and with Achet.

3. S. The English were involved with spice trade with the Dutch.

4. S. I think the British were very strong.
   E. Is that why they were in Malacca for 100 years?
   S. No .... they had better weapons and ships.

5. S. I think so ... it must have taken them the same time as it did the Portugeses ... about 130 years.
   E. Why?
   S. The British had to fight the Malays as did the Portuguese. But the British were much stronger than the Portugese.
   E. How?
   S. They defeated the Portuguese.

6. E. How did you decide that the rubber plantation was introduced into the country (Malaysia) ____ year ago?
   S. Because they had a celebration recently to mark 100 years since it was first introduced.
   E. Celebration?
   S. There were stems issued to mark the celebration.

7. E. How did you decide that the event of Singapore's separation from Malaysia was _____ years ago?
   S. It was during my mother's time.... it must have been.
   E. How?

S. She talks about the time when she lived in Singapore when she was small.

E. So how did you decide that the event of Singapore's separation from Malaysia was 50 years ago?

S. She (mother) is about 50 or more .... maybe 55 years old.

8. E. How did you decide that your mother is _____ years old?

S. Because she is very old.

E. Can't she be 40 and not 100?

S. She's old ... she cannot walk.

9. E. How did you decide that your last school holiday lasted for _____?

S. Because it was a very short time.

E. 2 weeks?

S. Yes .... my brother came back for the holiday and it was about 2 weeks.

10. E. How did you decide that the event of the Prime Minister's visit to China was _____ ago?

S. The paper says so ...

E. What paper?

S. The teacher talks about it also ...

11. S. It was one week ....

E. Not one year?

S. He visited China for one year .... yes, I think so.

12. S. Yes.... it was 1 year ago.

13. E. How did you decide that the 2nd term has been lasting for _____?

S. It has been too long.

E. Two and a half months?

S. Yes.

14. S. Because we will be having a school holiday soon.

E. So how did you decide that it had been 2 months since the school opened for the second term?

S. Because we always have school holidays after 3 months or so of school work.

E. And ....

S. We will have another school break soon.

15. S. I don't know ... yes, 6 weeks.

16. S. It has been a long time since our last holiday.

E. Four months?

S. Yes .... maybe more.

E. More?

S. Four and a half months.

17. S. I guess so .... yes two months .... I think so.

18. E. How did you decide that the first 'Boat People' from Vietnam arrived in Malaysia _____ ago?

S. They came here sometime last year .... I know.

E. How?

S. They were defeated in the war about last year.

19. S. I was told by a friend ... 3 years ago.

E. 3 years ago?

S. They came to Malaysia .... to Kuantan, Pahang.

20. E. How did you decide that the National System of Education was introduced in all schools in Malaysia _____ ago?

S. I was in primary one when it was introduced .... now I am in primar six.

E. Is that why you said that it was 6 years ago since the system was introduced in the schools.

S. Yes.

21. S. I think so .... my sister was taught in Malay language and she is older than me by one year.

22. S. It was introduced when I first started school in 1979.

E. How do you know?

S. It was six years ago .... isn't it?

APPENDIX 7B

SOME OF THE TYPICAL EXAMPLES OF STUDENTS' RESPONSES TO CATEGORY I WITH REGARD TO INTERVIEW QUESTION II

EXAMPLE: -

1. E. How did you decide that the event of British occupation of Malacca took the longest time?
   S. The British had superior weapons than the Portugese.

2. S. The British were stronger and more influential than the Portugese and they had better ships and guns than the Portugese.

3. S. The British were stronger .... defeated the Portugese with superior weapons. The Malays were defeated also.

4. S. The Portugese were not as strong as the British .... They could not stop the British.

5. S. The British were more influential than the Portugese. They made a lot of friends..... they were stronger also.

6. S. The Malays could not defeat the English because they were very powerful because they had better weapons.

7. S. The English were Christians.
   E. So?
   S. It took them a longer time to spread the religion .... the people did not like the British ..... but they were powerful.

8. S. The British wanted to spread Christianity and trade with the Indians.... they took a long time ..... they had also travelled to many places.

9. S. The British were stronger and influenced the Sultans into giving up their land to the British.

10. S. The British were better equipped than the Portugese. They had more weapons... than the Malays.

11. S. The British forced the Sultans to sign papers giving them the right to stay in the country as long as they liked ... The British wanted to stay in the country to trade in tin and rubber.

12. S. The British were too strong for the Sultans' people to fight ... they had better weapons.

13. S. The British wanted to stay in Malaya and they travelled to many states ... Perak and Penang.

14. S. The English were in the country until 1957 ... until independence. The Portugese were defeated by the British.

15. E. How did you decide that the event of British occupation in Penang took longer time than the British occupation of Malacca?

    S. Because they were there first ... then they only went to Singapore and Malacca.

16. S. The British were in Penang first ... then when Penang failed to become a good trading port they moved to Malacca.

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17. E. How do you decide that the school term is longer than your last school holiday?

    S. It is always longer than the school holiday... it seems a very long time since the school opened for the 2nd term.

18. S. I feel it has been too long.

    E. What?

    S. The school term.... always longer than school holidays.

19. S. I think so .... the school term is about 3 months ... we do not have school holidays that long ... yes, school term is longer than the school holiday.

20. S. Because we started the second term quite a long time ago.

    E. How do you know this?

    S. I know.

21. S. I guess so ... because our last school holiday was two weeks only and the 2nd term is normally longer than that.

22. S. I guess so .... I don't know. But it is often longer than school holidays.

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23. E. How did you decide that the time you left standard three was longer than your school holiday?

    S. Because it is longer ...

    E. How did you decide this?

    S. I was younger then ..... I am in standard six now.

24. S. I don't know ... may be because the school holidays are always for a short time only.

25. S. School holidays are longer sometimes.... but the last school holiday was two weeks .... I am in standard 6.

26. E. How did you decide that the time you have been in school (standard six) is longer than when you left standard three.

    S. I know.

27. S. Because I was in school for 6 years and I left standard three only 3 years ago, no, two and a half years ago.

28. S. I don't know .... I think so.

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