AN INVESTIGATION OF THE EFFECT OF SOCIAL CLASS AND SEX ON CREATIVITY AND ITS ASSOCIATED PERSONALITY FACTORS.

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ABSTRACT

An Investigation of the Effect of Social Class and Sex on Creativity and its associated Personality Factors.

The ability to be creative appears to be as much a reflection of aspects of the individual's personality as it is a reflection of his cognitive abilities. It was hoped to show in this investigation that both the social class and the sex of the individual would affect the development of the creative ability in that the child rearing practices which would affect both cognitive and personality attributes would differ between middle and working classes and according to the sex of the child being reared.

Five creativity tests were given to 35 boys and 44 girls from both middle and working classes. The tests used were the Uses, Incomplete Designs, Circles, Tell a Story and Make a Picture tests. (The latter was specially designed for this research.) Correlations of these measures with intelligence and with each other indicated that creativity was not closely related to intelligence scores nor were the creativity scores related to each other. Social class was found to be unrelated to the creativity scores. However, boys were seen to gain significantly higher scores than girls on the verbal creativity test (Uses).

The personality correlates investigated were

1. "openness to experience" as measured by
   (a) "coping" behaviour (Sentence Completion Test),
   (b) expression of aggression in a Sentence Completion Test and a Story Test;
   (c) a questionnaire;
   (d) recall of emotionally arousing material.
2. the ability to tolerate ambiguity.
3. breadth of categorising behaviour.

These measures varied in their degree of relationship to creativity and there were distinct sex differences in the relationship of these measures to creativity. Overall expression of aggression and breadth of categorising proved to be the most useful personality measures in predicting creativity.

The children's view of their parents' permissiveness was investigated, but this did not appear to be related to the creativity measures or to the personality variables. There appeared to be no sex or class differences either.

To my parents.

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Chapter 1. Introduction

Much of the research on creativity has been concerned with it as a form of cognitive activity (Getzels and Jackson 1962, Wallach and Kogan 1966, Yamamota 1961, 1965a, b, c, 1966, Torrance 1960, 1962, 1967). Those psychologists who have confined themselves to the theory of creativity (Poincaré 1924, Ghiselin 1952, Freud 1908a, Kubie 1958, 1965, Rogers 1959) have however emphasised the important role of the personality attributes and the emotional drives of the creative individual. It is the aim in this thesis to look particularly at these latter aspects as displayed in childhood.

The investigation focuses firstly on the overall relationship between social class and creativity; it appears to be the case that the particular child rearing practices thought to affect the development of the cognitive abilities and the personality attributes associated with creativity are likely to be class-linked (Bernstein 1958, 1959, 1960, 1966, Miller and Swanson 1960, Kohn 1959a and b, 1962, Bronfenbrenner 1947, 1961, Sears, Maccoby and Levin 1957) and thus it is to be expected that social class and creative ability will be related.

The second part of the investigation is concerned with the relationship of sex to creativity. There has always been a preponderance of males amongst the individuals making a creative contribution in the Western World (Vernon 1970, Heim 1970). It is argued here that one of the main reasons for this is that girls and boys are subjected to very different expectations and influences in their rearing and thus develop to different degrees both the personality characteristics and cognitive abilities associated with creativity and, following on from this, creative ability itself.

In addition to investigating the inter-relationships between creative ability, its associated personality characteristics, social class and sex, a third area of functioning is to be looked at. This concerns the way the child views the disciplinary pattern in the home. It was not possible to take actual measures of parental behaviour, particularly with regard to the dimension of punitiveness-permissiveness. However, an indirect measure (namely the child's assessment of the parents' permissiveness) was taken instead. Such information, though it does not give us facts about actual parental treatment,

does help to provide a link between social class, the child's view of his parents and how this view is related to the ability to be creative.

The chain of arguement goes thus

Social Class ---→ Parental Behaviour ---→ Child's Interpretation of Parental Behaviour and Attitudes ---→ Cognitive Skills and Personality Traits built up in Child ---→ Creativity.

1.1 The Environment and Cognitive Development

The present investigation assumes that certain features in the environment affect both the cognitive and personality characteristics associated with creativity. Piaget, among others, has indicated how the concepts and skills, by means of which the individual understands the world, are developed through use in reacting to environmental stimulation.

Vernon (1966a)has discussed how the interactions of the maturing individual and the environment are also ultimately bound up with dynamic personality trends, motivations and social processes.

The problems in isolating and investigating particular environmental features and specific behaviour patterns have been so immense that only slow progress has been made in making a causal analysis of man's behaviour. One area of functioning, cognitive behaviour, as reflected in measured intelligence and attainments, received special attention in the 1940's and 1950's. Concern was being expressed at that time about (a) the wastage of ability in the education system and (b) the need for equality of opportunity. Clear-cut findings have emerged with regard to the relationship of social class to intelligence - the higher the social class of the parents, the more likely the child will have higher measured intelligence and higher measured attainments. A good case has been made for supposing that part of this superiority rests on higher inherited potential (Burt 1971, Eysenck 1971, Jensen 1969). However, there is a considerable body of evidence to indicate that environmental factors also contribute to the superiority in that certain features in the environment affect the degree to which the child makes use of this inherited potential (Jordan 1933, Clarke and Clarke 1965, Tizard 1960, 1967, Bowlby 1953, 1956 et al). Research findings indicate that certain features in the middle class home give rise to attitudes in the child which enhance his ability to maximise his inherited intelligence i.e. the middle class

child tends to have a more positive relationship to school, more acceptable personality traits in the eyes of the teachers (Himmelweit 1966), less of a language barrier between himself and the teacher (Deutsch 1964), has values similar to the teacher (Warner et al 1949), has increased perceptual, linguistic and conceptual abilities (Bernstein 1958, 1959, 1960) and as well has parents who show greater interest in his achievements (Douglas 1964). It was further found that, in addition to starting school life with a lower measured I.Q. as compared with his middle class peer, the working class child suffers from a further disadvantage in that his measured intelligence tends to decrease as he gets older whilst the middle class child's performance tends to increase (Douglas 1964).

With the relationship between social class and functioning on conventional intelligence tests established, Guilford (1950), among others, focused attention on the restricted range of abilities tapped by the traditional tests. Guilford made the point that scores on those tests, used so widely to define brightness and achievement, were in fact only tapping "convergent" abilities. By this, Guilford was referring to the fact that for each of the questions in standard intelligence tests there was only one predetermined correct answer; imaginative and independent thinking was not being assessed. Guilford's (1950) paper came at a time when doubt was being expressed as to whether current methods of teaching, testing and examining in school and university might not unduly favour the conformist mentality, thus discouraging spontaneous, independent thought among those children who might have made original contributions to the Arts, Sciences and Technologies. Russia's production of Sputnik further pushed home the point that America's education system seemed to be failing to produce sufficient original scientists to maintain its technological lead in the modern world.

Apart from the international competitive aspect, the need to cope with an increased rate of technological and attitudinal change within society was stressed by Maslow (1967). He thought that the creative person would be at an advantage in a world of change. He was against teaching facts and techniques and advocated that we should try to "create an individual who is comfortable with change, enjoys change, who is able to improvise, who is able to face with confidence, strength and courage, a situation of which he has no forewarning".

Others have taken related lines. Rogers (1959) stressed the importance of creativity for mental health; he saw the tendency for self actualisation (by this he means the urge to expand, extend, develop and mature so that all the capacities of the organism are activated) to be the primary motivation for creativity; "The organism, in being creative, forms new relationships to the environment in its endeavour most fully to be itself". Patrick (1955) claimed that the stifling of creativity cuts at the very root of satisfaction in living and ultimately creates overwhelming tension and breakdown. Research in creativity began to accumulate, though much of the early work was confused. There was a loose usage of terms like creative, original, imaginative, gifted, talented, genius, etc. and whereas some writers in talking about creative individuals were referring to known creative genii, others were referring to the divergent thinking abilities of children measured in Guilford's divergent thinking tests.

Indeed it is difficult to define creativity, though many have tried (Ghiselin 1952, Taylor 1959, Stein 1953, Eisner 1963, Neisser 1967). The definitions have usually emphasised the production of novel combinations or unusual associations of ideas, and sometimes require that these should have social or theoretical value or make an emotional impact on people. Many psychologists, however, have viewed creative thinking as merely one kind of thinking (the latter ranging from unexpressed fantasy to logical reasoning) - and their definitions for research purposes have relied upon the notion of unusual associations. In talking about the creative process their approach has been less circumscribed. For example, Neisser (1967) says that the defining psychological characteristic of creative activity is not the quality of the product (even bad work can be creative) nor its uniqueness in history, but a certain freedom from constraint in the process itself. He says that it involves spontaneity and unpredictability in that the creative solution erupts more or less unconstrainedly from within the person himself; this is unlike problem solving, which, no matter how elegant, always involves a response to environmental demands.

It is generally agreed that the creative process is not a conscious one. Psychologists and psychiatrists observing creativity say that it is ultimately bound up with unconscious and pre-conscious functioning (Maslow 1959, 1963, 1967, Kubie 1958, 1965, Ghiselin 1952, etc.). Artists and scientists unite in reporting that their ideas, images and expressions simply appear more or less clearly, later to be elaborated consciously. Ghiselin (1952) states

categorically "Creative production by a process of purely conscious calculation never seems to occur". Needless to say, the unconscious aspect of creativity (often called the incubation period) is preceded by a conscious acquiring of relevant concepts and skills, the raw materials from which the solution must arise.

Though an absolute definition of creativity has not yet been arrived at, Eisner's (1963) assumptions are generally upheld by psychologists. He says with others (Russell and Russell 1961, Mead 1967, Moustakas 1966) that creativity is firstly a capacity possessed in some degree by all human beings. Secondly, that in order for a person to be considered creative, he must produce something (i.e. an object or idea) that meets four requirements: it must be public; it must be judged as novel; it must be seen as useful or satisfying to one group at some point in time. His fourth assumption is that creativity can be elicited through certain test situations and that the response to these test situations can be measured.

Psychological work in the area of creativity has been mainly concerned with establishing tests to measure this ability (Torrance 1963,1966, Guilford 1950,1959, 1966, 1967) and finding empirical support for establishing a distinction between creativity and intelligence as modes of cognitive activity (Getzels and Jackson 1962, Wallach and Kogan 1966, Hasan and Butcher 1966, Yamamota 1965). In all this research creativity has been considered essentially a cognitive activity. However, throughout the theoretical literature there has been constant reference to the underlying personality characteristics and emotional drives of the creative individual. Early investigators (Lombroso 1891, Kretschmer 1931, among others) emphasised the psychotic and neurotic tendencies of men of genius and whilst a considerable cross section of the acclaimed creative individuals are indeed unstable, eccentric and rebellious, there are still others who have lived full and very ordinary lives.

Scientific investigation of the personality characteristics of creative individuals (MacKinnon 1962b, Roe 1951, 1952a,1952b, Rogers 1959, Weisberg and Springer 1961, Hudson 1966, Cattell and Butcher 1968, Wallach and Kogan 1966, Barron 1955) does not produce conclusive results, though certain general themes emerge. The research of Barron, MacKinnon, Roe and Cattell provide evidence to indicate that dominance, independence and complexity of personality are the overriding features of the creative individual. The nature of this

complexity is only superficially investigated, however, though it is clear from the researchers' discussions that much is implied in the concept. Of particular interest is the large and complex response repertoire of the creative person. This appears to arise from a general "openness to experience" and accessibility of feelings which comes from a general absence of repression. This is an area almost uninvestigated and there is need for research here. An additional area of major interest is that of the environmental factors which foster the development of creativity in the individual. This too is uninvestigated so that we lack the guide lines which might help us to maximise the creative potential in every individual.

Traditional emphasis in schools upon conformity, both in behaviour and in the learning of facts, has been thought to be poor training for original thinking by both Torrance (1967) and Mead (1962). Difficulties in establishing the creative approach in the education system lies primarily in the lack of pointers as to what aids and fertilises the creative spark. Froebel sets out some theories of education for the 5 to 8 year olds and their reverberations are seen in most of the infant schools in Britain where free play is every day fare. Little concern need be expressed here about the stultifying of natural curiosity and creative thought. Froebel's ideas have penetrated to the lower parts of the Junior Schools too. It is, however, at the top end of the Junior Schools and in the Senior Schools that perhaps most concern, similar to that expressed by Torrance, should be felt in Britain. There is an essential conflict here, for facts and skills have to be acquired to act as the material from which creative ideas will arise. Yet in their acquisition, the ability to be original tends to be smothered.

The aspect in teaching which seems to be neglected is associated with very special untraditional skills. These centre around the provision of a permissive accepting atmosphere where children are urged to explore, create and question (Fromme 1964, Holt 1964, 1967, Goodman 1956). To the traditional teacher such an atmosphere is threatening and uncomfortable. The teacher's word is no longer the absolute and final one. He has to accept that his own assumptions are challenged. He has to accept unusual answers and try to evaluate them on the spot as argument proceeds. He must relinquish to some degree his traditional authoritarian role.

That teachers do not value the talents of their creative pupils has been demonstrated by Getzels and Jackson (1962), Torrance (1962) and Hasan and

Butcher (1966) who carried out almost identical experiments comparing a group of high intelligence children with high creative ones (as measured by Guilford type tests - see Chapter 2). In spite of the two groups having similar attainments, the teachers rated those children who were creative as undesirable in comparison to the conforming high intelligence children who were seen as highly desirable.

The schools' role in the awakening or deadening of the creative approach was clearly demonstrated by Haddon and Lytton (1971) who showed that the encouragement of the creative approach even for a short while in school had far reaching effects. In tracing 211children from formal and informal primary schools who had experienced 4 years of secondary education, they found that, regardless of the secondary schools the children attended subsequently (i.e. formal or informal), those children from informal primary schools did significantly better on divergent tests. Torrance blamed parents as well as teachers for the stultification of children's creativity, advising them of the importance of recognising, encouraging and praising exploratory and creative behaviour. However, neither he nor anyone else has made an attempt to indicate, in practical terms, how parents can foster those complex characteristics of the creative thinker, which involve a freedom from harsh defences and a general "openness to experience". These basic aspects of personality are laid down very early on in life (Erikson 1951) before a child begins school and it is thus primarily to parents that such practical advice, if there were any, should be addressed.

In trying to investigate the particular child rearing practices which allow a child to realise his creative potential, it seems appropriate to look first at a very broad aspect of his environment. Such an aspect is social class, a factor which has been found to be related to many aspects of child rearing. Bronfenbrenner (1961), Klein (1965), Sears, Maccoby and Levin (1957), Newson and Newson (1965, 1968) are just some of the investigators who confirm this point. They indicate that such factors as discipline in the home and attitudes to aggression, to expression of feelings, to independence and to authority, as well as those attitudes associated with psychoanalytic theory (feeding, weaning, toilet training), appear to be different from class to class.

It could be argued that, in an age of social mobility, it would be unlikely that specific modes of behaviour could be established as typical of a particular social class. Klein (1965) refutes this however; she demonstrates in her

review of the literature on English Culture that it is possible to show that experiences of childhood, parental behaviour and socio-economic conditions are related to each other, making a fairly consistent pattern with generation following generation in recurrent cycles of life. Klein points out that, although there are undoubtedly more families now, as compared with 100 years ago, who have available to them some choice of life style, the majority of people are not socially mobile and do follow traditional patterns. In view of this, it would seem that social class used as a major variable is likely to prove very useful in allowing us to sort out environmental factors likely to be important in promoting a creative attitude.

A further problem in this area of research lies in the fact that few women have shown outstanding creativity in any field. The marked differences between the sexes in their anatomical, physiological and biochemical characteristics might well result in predispositions towards some kind of behaviour rather than others. However there is considerable evidence to indicate that the cultural environment is actually not the same for girls as for boys. The social influences to which they are subjected differ in countless and subtle ways. The differential pressures begin early and operate continuously. They are omnipresent in such things as clothing, play, restrictions of mobility, home and school discipline, educational exposure and innumerable ideals of conduct and life satisfaction. Though these different experiences are not measured in this research, they do appear to be of significance when looking at the incidence of creativity in the population. It will become clear that, whilst both the middle and working classes treat their daughters and sons differently, the different treatment is not the same from class to class. The analysis of the creativity and personality test results in terms of the interaction of sex and class factors should allow us to produce hypotheses about more specific environmental areas for future investigations aimed at tracing the mainsprings of creativity.

In summary, the previous research has indicated the need, when assessing the determinants of creativity, to look at both the aspects of the early environment which affect cognitive development and those which affect personality development. It is thought that both aspects may be class related. If this is found to be so and if creativity proves to be related to the cognitive and personality factors under investigation, then we shall be able to offer substantial new pointers as to the origins of creativity.

Chapter 2. Creativity; History, Theory and Research.

2.1 History:

Genius in various fields of human affairs has always been recognised and highly valued. However it was not until Galton made his study of "Hereditary Genius" (1869) that natural scientists began to consider the thinking processes of these people. The early psychologists were not amongst these scientists; they tended to be caught up in the study of sensation, perception and memory and seemed unconcerned with investigating the mental processes by which creative products were achieved or to ask what underlying factors made some people exceptionally creative.

In the early 1900's psychologists showed a temporary interest in the subject with the emergence of some retrospective studies of outstanding individuals (Cox 1926, Pearson 1914, Ellis 1904). Terman (1926, 1930, 1959) was one of the few experimenters who made an ongoing study of giftedness. He set up a longitudinal investigation of "Gifted Children" with the aim of looking at their early influences, characteristics and thought processes as they grew to adulthood and progressed to middle age. The aims were commendable, though the study proved ultimately to be somewhat sterile. The reason for this sterility appeared to rest on Terman's narrow criterion of giftedness (i.e. high scores on conventional intelligence tests) by which he selected his experimental group. In the light of present views such a criterion would mean that those selected would be more likely to be the "convergent" thinkers in that the questions required reproductive rather than productive thought. Thus Terman's lament that "Few of the subjects showed any sign of brilliance at middle age", might have been expected in the light of present knowledge. Even those personality characteristics which Terman had isolated as being related to giftedness, were thought later (Bonsal and Stefflre 1955) to be more related to socio/economic class than to giftedness itself. Most of Terman's subjects were indeed middle class; this again was a function of the selection criteria in that "most of the items making up conventional intelligence tests favour the well taught child from the conventional home" (Burt 1962).

Terman's choice of criteria could well have included a measure of creativity in that there was no absence of appropriate tests. Whipple had listed several practicable tests of productive thinking (i.e. Analogies Test, Test for Uncontrolled Association, The Inkblot-Test - a test for linguistic invention) as early as 1915. However these tended to savour too much of discredited

introspectionist doctrine to be considered seriously by the behaviourist theorists whose views held sway at the time. Terman was probably influenced by this attitude.

Where tasks especially relevant to the assessment of the creative potential were tried in conventional tests, i.e. in the Stanford Revision of the Binet (Terman - 1916) (Binet's Inkblot Test to measure apperception) they were left out of the final draft because, in the pilot experiment, they had failed to discriminate between the bright and dull children as ranked by their teacher. This result might have been expected in the light of present studies (Getzels and Jackson 1962, Wallach and Kogan 1966). However at the time, interpretation of the finding was uncomplimentary to the task rather than to the teachers.

After this there was no further attempt to resurrect the old creativity tests. Like Terman, people studying genius associated it with high measured intelligence and did not seek for creativity measures. There had been however a few early isolated studies indicating a non-linear relationship between intelligence and creativity. Dearborn in 1898 studied the imaginative responses of Harvard students to inkblots. In discussing the results, he commented that two of the poorest records were made by students of decidedly intellectual type. Chassell (1916) found that performance tests similar to those included in many of the present tests of intelligence, bore relatively little relationship to performance in the creativity tests he had designed.

As Guilford (1966) pointed out, Terman in revising the Binet could have used Dearborn's findings as evidence supporting his own test results (see above) or he could have reached more recently demonstrated conclusions that intelligence broadly conceived, embraces several components some of which at least do not correlate very much with others.

It remained for Guilford (1950) in his address to the American Psychological Society to revive the interest in creativity. However, even before experiments were underway Guilford said "If the correlations between intelligence test scores and many types of creative processes are only moderate or low - and I predict that they will be - it is because the primary abilities represented in the tests are not all important for creative behaviour and some of the primary abilities important for creative behaviour are not all represented in the tests". This apt statement summarises the present view which has emerged after considerable research studies.

2.2 Problems of Measuring Creativity:

Psychological interest in creativity has centred around 5 main areas - the creative process, the creative product, measurement of creativity, personality attributes associated with creative ability and the environmental factors contributing to or inhibiting creative expression.

Early investigations of the process of creativity (Wallas 1926, Patrick 1935, 1937, 1938, 1941) gave us an understanding of the two phases of creativity - the period of practice and preparation and the mystical incubation period. Psychologists still uphold the distinction and recent work has not contributed to further knowledge of the creative process.

Studies of the creative product were fraught with the criterion problem in that judgement of works of art and scientific invention involves aesthetic criticism or theoretical evaluation; and these cannot be subjected to quantitative studies. There was clearly a need for a procedure whereby products of creativity could be subjected to measurement. The preparation of the divergent thinking tests satisfied this need.

In the production of the divergent thinking tests, it is assumed that creativity is a universal ability, present in every individual to some degree. Guilford in preparing the first batteries used his 3-dimensional model of the intellect as a base from which to understand what was being measured in each of the tests. Torrance adapted and improved the tests often designing one test which would tap several of the divergent thinking factors in one go. There is now a wide variety of tests available to the research worker - these are discussed in detail by Goldman (1964).

The Creativity Tests:

2.2.1 Description

There appear to be three main categories of tests: (i) those involving non-verbal material where a design of some kind is given to the subject and he is asked to create something from it - i.e. Circles Test, Incomplete Designs; (ii) those involving non-verbal stimuli but requiring verbal answers - i.e. Product Improvement Tests; (iii) those involving verbal stimuli and requiring verbal answers - i.e. Unusual Uses, Impossibilities, Synonyms.

Most of these tests tap the three factors of fluency, flexibility and originality which have been split by Guilford, after factor analaytic studies, as follows

Fluency:

(a) word fluency - an ability to produce words each containing a specified letter or combination of letters;

(b) associational fluency - an ability to produce as many synonyms or words per unit time;

(c) ideational fluency - an ability to produce ideas to fulfil certain requirements.

Flexibility:

(a) spontaneous flexibility - an ability to produce a large number of ideas without perseveration;

(b) adaptive flexibility - an ability to avoid obvious assumptions and to proceed without perseveration.

Originality:

(a) in the statistical sense (infrequency);

(b) remote associations - either in time or logically;

(c) the cleverness of the response (aesthetic judgement).

Some confusion has arisen as a result of research workers' seemingly haphazard choice of tests and their scoring of them. Many researchers assuming creativity to be a simple factor have combined several scores under the heading of a "creativity index", with no attention paid to the semantic labels; this has made comparative studies impossible to undertake (Yamamota 1966, Burt 1962). Torrance's preparation of test booklets incorporating a good sample of the different types of tests was aimed at preventing the confusion. His specific scoring instructions and norms have also helped. He is the first to acknowledge however that his tests are not sampling the whole universe of what is know as creative thinking. Nevertheless, he maintains that his thorough investigation of historical accounts of creative achievement and his many laboratory and field studies have ensured that his tests have as good face validity as possible.

Criticisms of the divergent tests have not only centred around their reliability and validity; they have also been criticised on account of their triviality. They are said to be unlikely to stimulate motivation and application in their subjects. Goldman (1964) feels that such criticism is invalid in that subjects of all ages ages appear to work at the tests with undoubted enthusiasm. He draws a parallel here with children's play which, to an unobservant adult, appears to be haphazard and trivial. To the child himself, however, his play is very serious

work involving concentration, imitation, learning and expression of fantasy.

Administration of these tests does not present difficulties. The tests are usually timed, with each test taking approximately 10 minutes. The desirable length of a battery is between $\frac{1}{2}$ and 1 hour, so that the reduction in quantity and quality of responses, which have been observed when tests go on for more than this time, is avoided.

Wallach and Kogan's (1966) emphasis on the need to use untimed, unstressful testing conditions when tapping creativity awoke some interest amongst research workers, although Kagan and Morgan's (1967) subsequent comparison of responses under timed and untimed conditions did not substantiate Wallach and Kogan's argument. Interest in the use of untimed tests has since waned.

Practical difficulties arising from the use of creativity tests tend to centre around scoring. An inescapable feature of the tests is that by maximising the quality of scoring we maximise time, costs and complexities. Scoring of creativity tests is seldom a simple clerical task. Scoring of originality - the score said to most nearly tap the essential nature of creativity - not only requires the preparation of a frequency table (i.e. the frequency of response occurring in the tested population) but each response has to be looked at again in order to code it for originality. Where such open-ended tests as the Tell a Story test are used, the amount of subjective judgement in scoring for fluency, flexibility and originality of content must be large.

Yamamota (1965b) has demonstrated that with fairly rigorous instructions, interscorer reliability coefficients can be high. He quotes the following correlations based on 64 records scored by two independent scorers:

	Fluency	Flexibility	Originality
Product Improvement	1.00	0.87	0.98
Unusual Uses (toy dog)	1.00	0.84	0.92
Unusual Uses (tin can)	1.00	0.87	0.98
Circles	1.00	0.91	0.98

(By flexibility he meant the ability to change the category of response, i.e. freedom from perseveration).

2.2.2 Norms

There is some doubt whether norms for creativity tests would serve any

purpose in that what is an unusual response for one culture or sub-culture would be common in another. Torrance has endeavoured to prepare some norms for a restricted population (i.e. American High School students). He, too, expresses reservations as to their usefulness even within a restricted population because of the variation in an individual's output from year to year. He notes i.e. that there is a slump in production of responses for 9 and 10 year olds and suggests that this might be due to the strong pressure for peer conformity occurring at this time. Goldman (1964) in discussing the feasibility of preparing cross-cultural norms, feels that it is an impossible task due to the difference in amount of "fantasising and regression in the service of the ego". Vernon (1965) however, in comparing the creative responses of 11 year olds (230 English school boys, 20 Hebridean - English speaking, 20 Hebridean - Gaelic speaking, 40 Canadian Indians, 50 Eskimoes) found a large amount of overlap of responses cross-culturally. A further interesting finding was the similar ideational fluency scores gained by Eskimo Indians from poor cultural backgrounds and the English children. He found too that the creativity variables were only slightly dependent on g.

2.2.3 Reliability

Yamamota's (1965a & b) investigation of interscorer reliabilities indicates that where sufficient instruction is given then correlations are high.

Test-retest reliabilities seem to be far lower however, and thus must be seen as one of the major drawbacks of the test. Torrance and Gowan (1963) suggest that there are special problems contributing to this low temporal reliability. Firstly, the results of all psychological tests given to children tend to be unreliable. Secondly, creativity tests often evoke, more than most, a psychological blocking which once overcome can make a previously unproductive respondent prolific in his responses. Torrance, when making test-retest experiments, reported high reliabilities, one reaching 0.97. However, the time periods allowed to elapse between the initial test and retest have only been in the order of a few weeks. Cropley and Clapson (1971) in a recent piece of research gave the Consequences and Circles tests 5 years after initial testing. At the retest stage the 110 subjects were in the 12th grade. Correlation coefficients (corrected for range restrictions where appropriate) ranged from 0.33 to 0.58. These, though apparently quite low, do fall within the range of reliability for the subtests of the W.I.S.C..

With regards to demonstrating internal consistency within the tests, Wallach and

Kogan (1966) have produced data for the tests they used. Most of the Spearman Brown split half reliabilities they carried out on the creativity tests were in excess of 0.80.

This high level of internal consistency falls down if correlations between the several different measures (i.e. fluency, flexibility and originality) taken on one particular test are calculated. This is understandable in terms of individual differences in the way people manifest their creative ability. Some people for instance may only produce a few ideas (i.e. low fluency) yet each one of the ideas would be highly original (i.e. high originality).

The level of consistency of scores between tests are low, too. This in part may be accounted for by the different level of interest aroused for different tasks.

Overall we see that although test-retest reliabilities are only moderately high, they measure up to those reported from the W.I.S.C.. We see, too, the importance of defining the content of various measures of creativity in that several aspects of cognitive functioning which do not necessarily relate to each other are involved.

2.2.4 Validity

The divergent thinking tests are open to complex validity problems. Available information tends to be scattered and to arise from incidental studies with broader objectives (Barron 1955, Drevdahl 1956).

Vernon (1965) states the validity problem succinctly thus:
"Just because a set of tests looks as though it involves creativity and gives lowish correlations with g, v, or k tests, this does not mean that it measures what we recognise as creativity in daily life. It is only when we can demonstrate that the tests actually differentiate between adults and children known on other grounds to be creative or non-creative and are of more value than other g tests for this purpose that they are useful.".

Shapiro (1968) indicates that the validity of these tests can best be established if such longitudinal studies as those of Terman were undertaken (i.e. large samples of apparently creative children should be followed up in later life to see if they fulfill their potential). The expense and time involved in such a study has made research workers reluctant to undertake it; though if the controversy about the validity of the tests continues to rage then this may indeed be the ultimate resort.

The other methods of ascertaining the validity of these tests (i.e. concurrent validation) often rest on shaky assumptions. The first method is represented by the work of Guilford in that he assumes that the factorial studies of the tests themselves are a kind of validation: he has not yet attempted to correlate these factors with outside measures. The second type of validation study involves the dichotomisation of a sample of subjects into high and low creative on the results of creativity tests for the purpose of comparing these extremes with other variables i.e. personality factors. If significant differences are found, then the creativity tests are assumed to have a degree of validity. The third and most satisfactory method is to apply a battery of predictors and to correlate the resulting scores with external criteria of creativity, i.e. an evaluation of the creative product, or other people's (i.e. supervisors, peers, teachers) ratings of the subject's creativity.

Even with this method the extensive research data (Taylor and Holland 1964, Wallace 1961, Piers, Daniels and Quackenbush 1960, Haddon and Lytton 1971) produces no firm conclusions. There is somewhat more evidence suggesting a positive correlation between supervisors and teachers ratings and creativity tests results (Buel 1960, Taylor and Holland 1964, Torrance 1960, Yamamota 1961, Wallace 1961) than there is negative (Piers, Daniels and Quackenbush 1960). The results of such studies might be thought to depend on the time spent in educating and defining for the rater the cues, inferences and behaviour for which they should be looking when making their evaluations of creativity. These ratings, like other assessment of this kind, are affected by halo effects; no matter which of a number of criteria are given to the judges as the basis for their ratings, the same individuals tend to be chosen or rejected, (Holland 1959). Another major factor distorting judgement is the individual's own personality. As Wallach and Kogan (1966) say, ratings actually tell us more about the raters than the people being rated. Thus a rigid uncreative teacher is unlikely to be able to assess accurately the creativity of her students.

If we take the view that creativity itself is a complex concept involving several different aspects of cognitive functioning, then it is not surprising to find the conflicting results mentioned here. Just as in scoring creativity tests, accurate definitive descriptions of the particular aspect of creativity being rated should be offered to raters. Taylor, Smith and Ghiselin (1963) found that 8 ratings of 166 scholars obtained from different sources (immediate supervisors, laboratory chiefs, peer ratings, subjective scoring and records) bore little

relationship to each other. When these results were factor analysed, 15 independent categories by which the raters had categorised creativity had been found. Taylor et al and Shapiro (1968) conclude that multidimensional criteria are necessary if we are to tap most of the diverse factors operative in creative performance.

As Guilford hypothesised, the tests which have factor loadings on originality appear to be more satisfactory in the identification of creativity, as assessed by the teacher, than do those having loadings on ideational fluency or flexibility. The latter factors seem to be more related to straight-forward academic performance. The range of correlation between originality scores on the creativity tests and ratings of originality ranged from 0.55 (Barron 1955) working with Air Force Officers to 0.3 (Drevdahl 1956) with students and 0.3 (Sprecher 1957) with graduate engineers.

It is clear then that the criterion problem is complex. In the main it is true to say that teachers ratings of creativity particularly originality (Yamamota 1961, Sommers 1961, Wallace 1961) tend to correlate significantly with originality scores on creativity tests. This is by no means a general rule and the degree of relationship varies according to the person doing the rating, the definitions of creativity he is given and the measures gained from the creativity tests. Goldman says of the tests: "They are not in their final form so too many criticisms may be premature. Their value lies in their possible use in identifying creative thinking abilities, in relating these to performance in other more convenient tests and to school achievements and in focusing upon periods in the educational sequence which may be inhibitive periods.". Ten years later Goldman's words are still relevant and are salutary to the critics. The fact remains however that until a consistent body of research verifies the validity of the tests with regard to outside defined criteria, they will remain somewhat suspect.

2.3 Cognitive Elements and Creativity:

The confused mass of research on creativity can be most usefully evaluated in the context of an understanding of the structure of the intellect, in that intelligence and creativity as aspects of the latter must be related to some degree. Whereas high scores on intelligence tests need not necessarily imply that a person is creative, it seems certain that "mere creativity without intelligence", as Galton (1869) long ago pointed out, "is all but worthless".

One of the first noteworthy studies on creativity was carried out by Getzels and Jackson (1962) who were primarily concerned with the relationship between creativity and intelligence. The study proved influential not because of the new methods used, but rather because of their exaggerated and controversial claims which attracted critics. The major claim was that creativity was a cognitive ability standing apart from the traditional concept of intelligence. The pupils chosen for intensive study were the boys and girls attending the senior classes of a private school in Chicago. The subjects of the experiment were 28 adolescents (sixth grade to senior year of High School) whose intelligence test scores had fallen within the top 20% of the class (average I.Q. 150 on either the W.I.S.C., Stanford Binet, or Henmon Neilson) but below the top 20% in tests of creativity (Word Association, Uses, Hidden Shapes, Fables, Make Up the Last Line of a Story, Make Up Problems) and 26 children whose scores on the creativity tests fell in the top 20% and whose intelligence test scores fell below the top 20% (average I.Q. 127). The research attempted to determine "what the pupils so selected are like as students, as individuals and as members of their family.".

The main findings were that (1) there was a low relationship between the I.Q. measure and creativity; (2) the creative group, despite their inferior home background, their inferior intelligence and their inferior classroom behaviour, actually scored higher marks in the educational tests than the "intelligent group"; (3) the creative group were rated as less desirable than their high intelligence peers by their teachers; (4) the creative group were also less popular among their peers. Criticisms of this study initially centred on the selection of the subjects - all middle class and all (even those below the top 20%) of above average intelligence. Many similar studies were carried out : Barron (1963), Cline Richards and Abe (1962), Cline Richards and Needham (1963), Flescher (1963), Guilford J. (1963) and Cropley (1966a), Wilson et al (1954), Torrance (1960, 1962), Torrance and Gowan (1963), Yamamota (1965a, b, c), with the aim of establishing beyond doubt the independence of creativity and intelligence claimed by Getzels and Jackson. Results differed and it was frequently difficult to make comparison between the studies because of the diverse creativity tests used and the wide variation in the scoring systems used.

In spite of these difficulties, the results of a number of the studies did suggest that Getzels' and Jackson's claims had some generality though the interpreation of the correlations obtained were, and still are, open to dispute. Getzels' and Jackson's results were the following: for 292 boys all 5 of the creativity

tests correlated significantly with intelligence (.05 level - average correlation 0.28) and 4 of the 5 tests did so for the 241 girls (average correlation 0.27). Between the creativity tests themselves the average correlation was 0.26 for boys and 0.28 for girls.

These results can be interpreted in two different ways according to the view taken about the general factor of intelligence. The British school (i.e. Burt and Wiseman) has always defended the idea of a general factor of intelligence, saying that positive and significant correlations are seen to exist between every form of cognitive activity. The American school however takes the view that there are a number of primary abilities and that the factors obtained from the kind of correlation which at first sight suggests a general factor ought always to be rotated to secure a simple structure of "group factors". Burt (1962) indicates that Getzels and Jackson interpreted their results (see above) in the American tradition in that they saw intelligence and creativity as two different "group factors" each characterised by a distinct kind of intellectual activity with little relationship between them. Burt (1962) argues that this claimed lack of relationship was due to the narrow band of intellectual activities tapped by the intelligence tests. He points out that the creativity correlations obtained in Getzels' and Jackson's work indicate that the creativity test results were no more related to each other than each was related to the intelligence measure. Burt claims that the general factor could account for the significant correlations obtained between the creativity tests and between these and intelligence, and claimed that not one of the residual correlations was numerically larger than 0.01 when the general factor from Getzels' and Jackson's figures had been eliminated (Burt 1962). Thorndike (1963a) and Marsh (1964) in factorising Getzels' and Jackson's correlations support Burt's argument in that they were unable to obtain a separate factor which was defined by the creativity tests and independent of I.Q.. Thorndike concluded (1963b) that although the creativity tests do tend to intercorrelate significantly, there is little evidence that they imply a separate clearly defined factor of intelligence. Cropley (1966a)demonstrated a separate creativity factor in an oblique rotation of his results obtained from divergent and convergent tests given to 320 13 year old children. However, he found the factor correlated significantly with the factor defined by the more normal tests of intelligence and there was clearly an overlap between creativity and intelligence.

Evidence against the existence of a separate creativity factor is not forthcoming

when the careful study carried out by Wallach and Kogan (1966) was factorised. The study differed from most previous work in that the tests were administered in an individual rather than a group setting, considerable importance being attached to the presence of a "playful permissive task attitude" for the production of creative responses. Before proceeding to a more detailed analysis of creativity, the authors sought to establish the relative independence of the results of the "creativity" measures from those obtained from conventional tests of intelligence. 15 tests were used in all - 5 of which were the creativity tests (Instances, Alternate Uses, Similarities, Pattern Meanings and Line Meanings) scored for uniqueness and fluency. Testing was carried out in one school, a group of 151 children (81 girls and 70 boys) of similar middle class background being used. From the results Wallach and Kogan derived an impressive set of intercorrelations demonstrating a clear tendency for creativity and "g" tests to form independent groups with little overlap at first sight (average correlations among the creativity measures were, for boys 0.34, and for girls 0.50. Average correlations between creativity and intelligence being 0.05 for boys and 0.13 for girls). These results were factorised by Ward (1967) who used the Promax Oblique method. He found four factors. Factor I identified with school attainments; Factor II was clearly a creativity factor showing low correlations with Factor I; Factor III was associated with the number of responses given, and Factor IV was a general factor negatively correlating with I and II, probably representing testing atmosphere. Ward concludes that "Wallach and Kogan's choice of procedure is supported by these results; further their analysis demonstrates the factorial nature of creativity". Whether one chooses to regard them as more or less independent of convergent thinking, it seems then that creativity tests are tapping an area of functioning generally untapped in the widely available intelligence tests. Burt himself agrees that they would provide good supplements to items on the conventional tests, "the latter eliciting reproductive thought giving advantage to the well-taught child from a cultured home whereas the creativity tests elicit productive thought" (Burt).

Burt and Guilford both view creative productive thought as a complex ability and therefore see the summing of many scores from different types of creativity tests as an erroneous procedure. Indeed Ghiselin (1959) has already demonstrated the presence of a verbal creativity factor and speculated that an analogous non-verbal factor might exist. Other investigators (Anderson 1964, Taylor 1964, McGuire et al 1961, Sultan 1962) have confirmed that there are differing numbers

of factors of creativity. That creativity is not as simple as was once thought is clear.

It is difficult, however, to reconcile those studies where creativity and intelligence show a marked relationship with those which don't. One possible way to attempt to explain this is to follow Taylor 1964, Vernon 1965 and Yamamota 1965b, who suggest that creativity and intelligence may become independent only after some critical level of I.Q. is reached in accordance with Barron's threshold theory. Such an idea makes sense, in terms of general experience, in that highly intelligence people lacking any creative spark are evident in many walks of life. At the higher levels of intelligence, creativity is not just further evidence of intelligence, it is a reflection of the individual's approach to life and problems, i.e. it is more closely related to attributes of personality than to intellectual attributes (Freud 1908, Barron 1955, McGuire et al 1961, Cropley 1965). The present study was concerned to see how far intelligence and creativity were related or independent in an 'unselected' sample of children containing a wide range of intelligence. It was also designed to see whether creativity could be regarded as a simple unitary concept or whether tests were so low in their intercorrelations that they had to be regarded as separate abilities. Lastly, it was intended to look at the relationships of creativity (or the creativities) to certain personality attributes - this will be discussed in later chapters.

The hypotheses concerning creativity and intelligence are:-

1a Creativity is distinct from intelligence.

1b Creativity is complex rather than unitary.

2.4 Personality Correlates of Creativity and their Origin:

2.4.1 Theory: Personality Correlates

Philosophers and theoretical psychologists have always taken the view that aspects of personality played a much more crucial role in creativity than it did in manifestations of "high intelligence". Dow (1967) said "Creativity is a way of life" - Maslow (1954) "a process of self actualising". Hilgard (1959) spoke of the totality of problem solving in that the problem and the problem solver was one and indivisable. May (1961) spoke of the need for great emotional involvement in creativity and Gutman (1961) says that "the creative process draws from all the depths of the personality".

Guilford too made the point, as early as 1957, that creativity was linked to both cognitive and affective attributes. His cognitive model, he said, could be used to understand and develop the theme.

It is clear therefore that if we are to understand creativity sufficiently to respond to Mead's and Torrance's plea to "loose the bonds that prevent the natural creativity of the individual emerging" we must look more closely at the aspects of personality said to be involved in the creative process. In so doing, we should also attempt to look at the environmental factors which are said to promote or cramp the development of these attributes.

The terms used to describe the personality attributes are vague, diverse and often conflicting. Anderson (1959) gathers them together from the literature:

> "desire to grow, capacity to be puzzled, awareness, spontaneity, spontaneous flexibility, adaptive flexibility, originality, openness to experience, having no boundaries, permeability to boundaries, yielding, readiness to yield, abandonning, letting go, being born every day, discarding the irrelevant, ability to toy with elements, persistence, hard work, composition, decomposition, recomposition, differentiation, integration, being at peace with the world, honesty, harmony, humility, enthusiasm, integrity, courage, willingness to be alone, gust for temporary chaos, security in uncertainty, tolerance of ambiguity".

It is no wonder that investigations in this area have been sparse; the psychometricians could not come to grips with the ill-defined nature of the terms nor did many of the theoreticians accede that the creative process was open to investigation. Most of them had little time for the divergent thinking tests and looked only at the retrospective studies of innovators (MacKinnon 1962b, Roe 1952 et al) to furnish us with details of the personality characteristics and early causal influences which make for creative ability. Such studies, without doubt, are interesting, but they often lack scientific validity particularly where facts of early life are obtained by recall and hazy memories. The processes of idealisation, repression and denial have been at work over a long period and, unless the individual is exceptional, the picture painted of his early life and feelings will be inaccurate and thus not useful. It is only if we are to accept the idea of the universality of creativity and the usefulness of the creativity tests that it becomes possible both to investigate the personality characteristics of the creative individual and to try to relate their emergence to factors in the home - the field of socialisation.

One of the main themes to emerge from the literature is the involvement, in the incubation period of unconscious non-verbal activity out of which the creative product emerges (Rossman 1931, Hadamad 1949, Maier 1931a, Ghiselin 1952). The latter says "The first impulse towards a new order in the psychic life.....is an impulse away from the conscious activity.....an impulse towards unconsciousness".

The reference to the unconscious element leads us first to look at the way Freud (1908a, b, 1910) viewed creativity. His writings full of undefined and abstract variables in part account for the sterility of thought in this field.

He saw creative behaviour as sublimated expression of pregenital libidinal drives (i.e. he saw painting and sculpture to be a sublimation of anal eroticism). Freud took the view that if the pregenital erotic feelings occurring in the infant at the oral, anal and genital phases of development were allowed expression and were untraumatically dealt with, there would be a lesser need for the emergence of neurotic mechanisms in the development of the adult personality, i.e. a lesser need for sublimation and other defence mechanisms. The urge for creative expression would be lessened.

Since Freud enunciated this theme, practicing psychiatrists have been wrestling with the problems that it throws up. Does analysis, in modifying the conflict areas of the personality, quell the inner tensions that are necessary to the creative act ? Does emotional stability bring with it tranquility and a lack of motivation to create, aspire or succeed ? Freudian followers cannot avoid answering in the affirmative, though they are not comfortable with these conclusions. Post-Freudian (Melanie Klein (1949), Anthony Storr (1972) among others) have looked for a different explanation allowing the questions posed here to be answered in the negative.

Klein (1923,'49,'53)although acknowledging parts of Freud's theory, stresses the importance of the early months in a child's life to a greater degree than does Freud. Of over-riding importance to Klein is the relationship between mother and child at the breast, or in the feeding situation. She maintains that after a certain time the infant begins to see the mother and the world as separate from himself and accompanying this perception goes an emotional feeling about the objects or people in his world determined by how the infant is feeling at that time. The world is thus seen as good and bad and often the same object might be imbued both with good and bad feelings in rapid succession. This

painful feeling of ambivalence towards the mother brings with it feelings of separation, jealousy and envy and the child attacks the mother in his mind. Such attacks provoke feelings of pining, loss and guilt out of which arises a need to make reparation. It is in the act of reparation that the creative urge stems, says Klein. Hannah Segal (1970) in speaking of this theory with regard to the creativity of the artist says "that art has its main roots in destructiveness. The artist defiles the canvas, the sculptor chips his stone. From this destruction arises a compulsive need to create a whole new world.". This universal need to make reparation lies, according to Klein, at the root of all creative acts. Those individuals who are seen to be uncreative, are those whose desires, feelings and wishes have created so much unresolved anxiety that the psychic energy cannot be mobilised to make reparation. The individual becomes locked in a mutually reinforcing circle of hatred and fear manifest in acute anxiety.

Klein states that the real aggressiveness of parents is comparatively unimportant compared with the aggressiveness which the child projects upon his parents. Further this projected aggression is inevitable regardless of enlightened parental handling. All children have to deal with separation from mother, weaning and intestinal discomfort and these are seen as sources of aggression (Brown 1964). Klein concludes that social betterment will not be accomplished by studying ideal child rearing practices. Instead the answer lies in dispersing the anxiety produced by projected aggression. Whilst Klein sees this as occurring ideally in analysis, it would seem to be the case that those parents who could accept aggression and expect it would be serving as releasers of anxiety too. It is in this respect that parental attitudes according to Klein will be seen to affect creativity.

Storr (1972) accepts the importance of Klein's theories in understanding creativity and outlines the various psychodynamic forces in the personality originating from the love/hate feelings felt towards the mother. Creativity can provide expression for the wish-fulfilling phantasies of the dissatisfied; it can act as a defence against schizoid and depressive states; it can also reflect a compulsive need for order and control. That such psychopathology occurs to some extent in all humans is evident in that the residue of "pregenital traits , childish attitudes and the dissatisfactions which are their accompaniments, are the human lot". We are still faced with the question however of why the creative are driven to create by their psycho-pathology whilst the average man is not. It can be argued that the creative man is less likely to suffer

from his psycho-pathology in that his creativity serves as a way of coping with his inner tensions; it is thus a helathy adaptation. The uncreative individual with an equal amount of psychopathology has no such outlet. This gets us no further forward in our search for the mainspring of creativity - only in describing a possible function of it. Storr sees the difference in the method of dealing with psychopathology as arising from the difference in ego strength, the creative individual have a strong ego and a strong need to resolve the opposites in his nature in his quest for his identity. The creative person also, says Storr, has an unusual access to his own inner depths and also strong or at least adequate controls to contain and make use of what he finds there.

Gutman (1961), Kubie (1958, 1965) and Rogers (1959), like Storr and Klein, all take the view that creativity is not the product of sublimated sexuality. They see that the creative potential has a separate source of energy: this nevertheless can be distorted by neurotic processes such as rigid defence mechanisms. One of the main themes put forward by Rogers and Kubie is that of the "openness to experience" of the creative individual. By this Rogers is meaning that each stimulus impinging on the individual, be it external, from the viscera or as memory traces from the central nervous system, is freely relayed through the nervous systems without being distorted by any process of defensiveness. Each of the stimuli are available to awareness. Kubie feels that in the creative individual there is a free flow between the conscious, pre-conscious and unconscious, and that most experiences are available to the individual in the creative process. Storr, too, sees this accessibility of experience and concern with the inner life (i.e. fantasy) as a marked characteristic of the creative individual. Rogers believed that people could be helped to become more open to experience through non-directive therapy. The subsequent relinquishing of defence mechanisms served to promote creativity in his analysed subjects.

Poincaré (1924) in describing his own creativity states that in the incubation period (the period of apparent rest) the ideas mobilized in the initial work period "freely continue their dances"....."hitting against each other or against immobilised concepts and ideas until a good combination arises". Rogers would take the view that these immobilised concepts and ideas were only available to the creative individual because they had not been distorted by neurotic processes. They would be available as tools for the creative process. Rogers isolates other features which characterise the creative individual.

Lack of rigidity, permeability of boundaries in concepts, beliefs, perceptions and hypotheses, a tolerance of ambiguity where ambiguity exists, the ability to receive much conflicting information without forcing closure upon the situation - all these, Rogers says, are implied in the attitude of being "open to experience".

This concept is a powerful, interesting and seemingly appropriate one when applied to creativity. It is comparatively uninvestigated except in the context of Rogers' own experiences of the analyses of his patients. It is however a theme to be investigated in the present research.

Cropley (1966a & b, 1967) writing much later than Rogers and with the benefit of some research knowledge on which to draw, adds a few more attributes characteristic of the creative individual. Taking up some of Bruner's work on categorising (1957, 1959) he felt that people who made fine discriminations between bits of input and who required high levels of similarity before they could see relationships (narrow categorisers) would be likely to be uncreative. The reason for this lies in the narrow categoriser's inability to store information as though it consisted of a large number of relatively unrelated specific bits. They would thus be unlikely to make the kind of cognitive leaps involved in creative thinking. On the other hand he felt that a willingness to treat data whose connection with each other is not immediately apparent, as roughly equivalent, would be particularly favourable to the appearance of creativity. A further difference between creative and uncreative people according to Cropley lies in their "cognitive styles". By this he means the way in which individuals take in the world. Those people whose cognitive style involves the least censoring of information available from the outside world are likely to be the most creative.

Cropley (1967) substantiates Rogers' view of the importance of flexibility to creative thinking and adds a final attribute - that of the ability to take intellectual risks and think boldly.

It can be seen from this brief discussion that there are many views about the origin of creativity and the attributes of the creative thinker. Freud's view that creativity is sublimated sexuality does not hold much sway except amongst orthodox analysts. Most dynamic psychologists and psychiatrists seem to take the view that creativity is a potentially universal phenomen and it is only when it is distorted and cramped by neurotic processes that it is destroyed. Rogers presents what seem to be the most useful and meaningful contributions

to our understanding of the approach and personality of a creative individual. The characteristics of being "open to experience", experiencing each new stimulus to the full and having these experiences available in the creative process seem to get at the root of what we mean when we refer to a creative approach. Features such as lack of rigidity, lack of censorship, broad categorising ability, tolerance of ambiguity all seem to link up easily with being "open to experience". This is a rich field for research.

2.4.2 Origins of the Creative Personality.

There is very little literature available on the environmental factors which might encourage the development of those personality characteristics associated with creativity. There seems little doubt that education, training and encouragement with an emphasis on enhancing divergent thinking can boost childrens' scores on creativity tests. (Haddon and Lytton 1971 etc.) Torrance (1962) stresses the need for the creative child to be given a refuge away from the pressure of peer conformity, saying that he should be sponsored by an adult in order than he can test his ideas and thinking without having to subject himself to peer reactions. Further, Torrance says the creative child should be helped to understand his own divergence; and his parents should be encouraged to understand it too. That these guide lines are useful in helping the child who is already creative seems apparent. One is still left, however, with the task of isolating the factors in the early life of the child which have led to the development of those attributes of creativity which Torrance urges us to support. Since psychologists almost universally hold the view that basic personality patterns are set down in the first few years of life, these attributes must have arisen as a result of the child's interactions with the parents i.e. in the early child rearing practices. A search of the literature reveals that whilst there are a few retrospective studies of genius which give indications as to the likely casual factors (these will be discussed in the next section) theories are almost non-existent. It is necessary therefore to make reasoned statements about the environmental features most likely to bring about the drive to create.

Even though we accept the Kleinian view of the universal tension arising from infantile love and hate feelings, it seems clear that the attitudes of the mother to her child in their early relationship will accentuate or reduce the tension according to her actions. These early interactions provide the basic pattern of an individual's responses and among other things probably act as the

stimulus for the creative approach to life. These early maternal attitudes are difficult to study because they are rarely verbally expressed and usually involve unconscious processes which escape all but the most skilled observations.

Storr indicates that a degree of psychopathology exists in all of us, so this is not a distinctive feature of the creative attitude, though it may be a necessary one. The features which, as we have seen, predominantly characterise the creative individual are the freedom from defences, the easy access and free flow of experience between the conscious and the unconscious, a strong independen ego and a drive to reconcile the opposites in his nature. It is in the development of these characteristics that we can reflect on the child rearing practices ensuring their development. The building up of a strong ego, the latter being the conscious controlling and executive part of the personality, occurs by repeated consistent and rewarded learning experiences occurring usually in the first 5 years. Erikson's (1950) first three stages (he lists 8 altogether) of development seem to incorporate the roots of healthy ego development. These are listed as:

1. basic trust v mistrust, giving rise to drive and hope;
2. autonomy v shame and doubt, giving rise to self control and will power;
3. initiative v shame and doubt, giving rise to direction, purpose and will.

These three dichotomies are seen to arise from the parents' attitude to the feeding, toilet training and oedipal situations respectively, but are reflected widely in every situation in dealing with the child and usually in a consistent way. (Sears Maccoby and Levin's (1957) research indicated the general consistency of parents' attitudes over a wide spectrum of the child's activities). Erikson stresse that the overriding features of maternal handling in these three phases are the good quality of caring, the mother's sensitivity to the child's needs and the permissive attitude in carrying out training.

Bernstein (1958, 1960), Klein J. (1965) among others, indicate that in building up independence, parents from the start are intent on encouraging the child's internal controls. They will seek opportunities to label the child's experiences, talk about them, answer questions to encourage more questions and give him the opportunity to experiment and investigate even though the results of such behaviour are not always desirable. The child slowly begins to build up his own set of values to some degree, usually congruent with the parents', but where differences develop they are treated with respect and the child's individuality is acknowledged.

In order that the child does not build up a rigid set of defence mechanisms

which screen out and distort experiences, parents are likely to have given reign to the expression of natural childish impulses associated with ambivalence, sexuality and aggression. Regression and aggression would be accepted as natural and important human experiences. (Sears Maccoby and Levin 1957) Socialising will have been carried out gently and there would have been little need for large amounts of repression. Experiences, memories and feelings would be accessible in the flow of material between the conscious, pre- and unconscious.

It will be seen in the chapter on child rearing practices and social class that the experiences talked about here are experiences characteristic of a certain class. Further, it will be seen that the sex of the child being reared affects the extent to which these characteristics are encouraged. It is from these considerations that the basic hypotheses of this thesis will be postulated.

2.4.3 Research concerned with the Personality and early Influences of the Creative Individual.

In comparison with the attention given to the creativity-intelligence controversy, very little work has been done on the personality factors which make for the creative approach. Furthermore, even less has been done on the formative environmental factors contributing to this approach. The retrospective studies of Roe (1951, 1952a, 1952b) and MacKinnon (1962b) throw light on some important aspects of the creative individual's personality, though these two workers do not present an entirely consistent picture.

MacKinnon carried out his intensive investigation on architects nominated for their outstanding creativity. He chose to investigate creative people in this profession because he considered architecture to incorporate both artistic and scientific skills. 40 of the 64 architects invited (all considered creative by their professional colleagues) attended an assessment weekend. In addition, two other groups of architects attended and were used as comparison groups. One group was composed of architects who had worked with members of the experimental group, whilst the other group was made up of architects not nominated as highly creative.

Amongst other tests, they were given the M.M.P.I., Barron Welsh Art Scale, California Personality Inventory and the Strong Vocational Interest Blank. One of the main findings of the research was the zero relationship between creativity and intelligence, but this would be expected in the light of Barron's "threshhold" theory - all the subjects being of high I.Q.. The creative group were noted for their good opinion of themselves, scoring high on

acceptance of self. They saw themselves as inventive, independent and determined. On the schizophrenia dimension of the M.M.P.I. they scored 5 to 10 points higher than average. This was interpreted by MacKinnon to indicate high intellect and richness of personality rather than psychopathology. They also showed a high score on the femininity factor of the same tests indicating their openness to feelings and emotions and general self awareness (such traits are attributed to women in the American Culture). They were disposed to admit complexity into their perceptions without being made anxious. They were relatively uninterested in detail, inclined to be dominant, concerned about social status, poised, spontaneous, self confident and self assured, persuasive, verbally fluent and strongly motivated to achieve.

The best predictor of creativity was found to be a word association test scored for originality. The experimental group scored on average 204 words whilst group 2 scored 128 and group 3 114.

In summary, MacKinnon concludes that "the most outstanding features of the creative person are his openness to experience, his struggling with the opposites in his nature striving ever for a more effective reconciliation of them and his seeking to tolerate and to bind increasingly large quantities of tension as he strives for creative solutions to ever more difficult problems which are not set for him but which he sets for himself".

Roe working with 64 outstanding scientists used projective tests and an intensive interview to build up her picture and she summarises her results as follows:

"They are the first born children of a middle class family, the sons of professional men. They pretty generally show a sense of inferiority in childhood and young adulthood and experience difficulties with personal relationships. They were compensating for this by intense concentration on some field of research in which they became outstanding. They show intense dedication to their work and a strong desire for recognitition. Thus they become absorbed to the exclusion of most normal interests. It is interesting that $\frac{1}{4}$ of them had lost a parent either by death or divorce and several were sickly in childhood". Roe suggests that the most important single factor in the making of a creative scientist is the need and ability to develop personal independence to a high degree.

Vernon (1967), looking at the difficulties inherent in being creative, used Roe's, MacKinnon's and Torrance's work to conclude that creative individuals are seen to have difficulties in personal relationships. Care should be taken in accepting

such conclusions, however. If we are to take Rogers' view that the creative individual is open to experience and is aware of his feelings (both negative and positive) then in discussing his relationships the creative individual is likely to be very frank about both his difficulties and negative feelings; he will not play them down or repress them as most people would be inclined to do.

2.4.4 The Origins of the Creative Personality.

The remaining studies concerned with investigating the attributes of the creative individual rely on the divergent tests to discriminate between high and low creative people. Barron (1955), Wallach and Kogan (1966), Weisberg and Springer (1961), Hudson (1966) and Garwood (1964), Pine and Holt (1960) are the main contributors. Although very different groups of subjects were used in the various works, several common themes emerge which fit in with the theoretical contribution discussed at the beginning of this chapter.

Barron (1955) compared a selected group of 15 creative captains from the United States Air Force with 15 uncreative captains (selected through paper and pencil tests, living in assessment, social interaction, group discussion, psychodrama etc.). The paper and pencil tests were the following : Unusual Uses, Consequence Plot Titles, Rorschach O+, Thematic Apperception Test, Anagrams, Word Rearrangement Test, and Achromatic Inkblots. When the two groups had been selected Barron attempted to look at the personality differences between them with several personality tests (similar to those used by MacKinnon). He found that the creative group were complex, independent, dominant and expressed impulses freely, rejecting suppression as a means of control.

Wallach and Kogan (1966) divided their 151 high school subjects (see Chapter 3) into 4 groups according to their scores on the intelligence and creativity tests (Group 1 - High intelligence, high creativity; Group 2 - High intelligence and low creativity; Group 3 - Low intelligence and high creativity; Group 4 - Low intelligence and low creativity) and considered the personality characteristics of each group. They found Group 1 to be the most sociable and most productive in school; Group 2 were addicted to academic success and were over controlled and aloof; Group 3 were in angry conflict with themselves because they were not valued in the school setting; Group 4 were basically bewildered, tending to regress or produce psychosomatic symptons. Overall, they found creative children were generally attention seeking and disruptive with little repression of unacceptable impulses. Clearly where intelligence

and achievement accompanied this creativity, then the children were more acceptable to the teacher.

Weisberg and Springer (1961) working intensively with 9 year olds - giving traditional and projective tests and observing their subjects' interaction with peers, teachers and parents - found the creative children to have "an ability to dissolve boundaries". They found that with the creative children "the problem stimulus evoked material from various experiential areas. The mind was able to regress in terms of organisation so that the material from these experiential areas had free access to the problem".

Garwood (1964) working with science majors found the creative individuals (as assessed by Guilford divergent tests) in his research to show greater integration of unconscious material as pertaining to concepts of self, father and mother. Further they yielded significantly lower scores on the socialisation and self-control scales of the C.P.I..

Hudson (1966) comparing sixth form English students who did well on convergent tests with those doing well on divergent tests, found the divergers to enjoy the expression of personal feelings to a greater degree than the convergers.

Pine and Holt (1960) draw our attention to the necessity of ego controls acting on the freely expressed material arising from the depths of the personality and their study is of interest in that they attempted to quantify both ego controls and "primary process expression" and were apparently successful in so doing. With 13 female and 14 male stable (as measured by the M.M.P.I.) and intelligent undergraduate volunteers,they investigated a concept introduced by Kris (1952) - "regression in the service of the ego". This is psycho-analytic in origin and refers to the control by the ego of primary process material (primitive, non logical and drive dominated). The latter they say is a necessary part of creative thought but when expressed without controls, only bizarre responses of poor quality are produced. Rorschach responses were quantitatively evalued for (i) expression of primary process, i.e. those responses with aggressive derivatives, libidinal derivatives and anxiety content; (ii) controls rated on a 6 point scale according to the acceptability of the response in ordinary social communication. Results indicated that,as hypothesised,creativity (as measured by several traditional creativity tests) was related to the quality of the imaginative production rather than the gross amount of primary process expression.

With regard to the child rearing patterns which produced these traits, only Weisberg and Springer have gained experimental evidence. This was obtained from parental interviews carried out by highly trained social workers. They found that there was an openness of exchange and an active interaction between the parents of a creative child. Both parents were seen to have well-defined personalities and family conflicts were openly expressed. The child, although at first made anxious by this, soon began to learn to deal with family conflict by fantasied restructuring of the environment. Parental tolerance for regressed behaviour was evident and the child was not made to feel anxious about this. Repression and withdrawal were not the means by which the creative child dealt with a chronically anxiety-producing environment.

MacKinnon's subjects talked about their childhood in retrospect and they reported that they were independent from parents, lacking an intense closeness particularly with their fathers (this was not seen to be rejection though). Discipline was seen as consistent and predictable. Their fathers were normally successful and their mothers had active careers. There appeared to be ambiguities in sexual identification - with the creative individuals either identifying with both parents or neither. They reported parental emphasis on the development of personal ethical codes rather than on a particular religion. They experienced no strong parental pressure to succeed. Such retrospective information is, though interesting, without much scientific validity however, in that time and events must have distorted impressions and memories.

Overall, it does seem possible both from theory and research to identify certain clusters of personality traits associated with creativity in the individual. These centre around Rogers' concept of being open to experience and are complex characteristics difficult to investigate thoroughly and scientifically.

Creative individuals seem to be open to feelings, have past experiences easily available to them; they appear not to use the defence mechanisms of repression to cut off large areas of experience and they thus seem to have access to material which is usually unconscious in the non-creative individual. Further, they

appear to be comfortable with the anxiety aroused by the resulting conflict situations (i.e. ambivalence). They are supposed to be dominant, independent and to have some difficulty with personal relationships though care should be taken in interpreting the latter fact (i.e. such an admission may only be a reflection of the ease with which ambivalent feelings are expressed and accepted).

These research findings need verification. Further, several important themes concerning the development of these characteristics in the early family relationships high lighted in the theoretical literature remain uninvestigated. Three particular aspects of personality functioning have been selected as being the most crucial to the creative attitude and to warrant deeper investigation. They are:

(1) the ability to tolerate ambiguity (at present totally uninvestigated);

(2) the ability to be in contact with and express feelings (referred to in the theoretical literature but comparatively uninvestigated);

(3) the ability to manifest broad categorising ability.

The aim in the present study is to see if these characteristics are related to creativity as measured by divergent thinking tests, and to see if their distribution in the tested population varies according to social class and sex. If class and sex patternings do exist then our knowledge of the child rearing patterns (which also differ according to class and sex) will allow us to highlight the most useful areas for future research into the factors contributing to the creative attitude. It appears from the few research studies and the theory available to us that the attitude of "parental permissiveness" with all its implications is one of the crucial factors affecting the development of the creative attitude. This is measured indirectly in this research by obtaining measures of the child's view of his parents. Such measures may indeed prove to be of far greater use to us than direct observation, in that the child is expressing the unconscious message he is getting from his parents in his rearing rather than the observable conscious behaviour obtainable from parental interview or questionnaire.

It is seen that social class as a concept is basic to the present research as it is felt that it's far reaching implications with regard to the environmental factors experienced by the child will affect the development of the creative attitude. It is a complex and interesting concept influencing almost every aspect of experience. It is considered here in the context of its influence on creativity.

Chapter 3. Social Class.

3.1 Introduction:

Social Class is a concept on which many psychological and sociological studies are founded. It is a concept based on the assumption that the community is made up of strata arranged in the form of a hierarchy. Williams (1951) defines social class as "an aggregate of individuals who occupy broadly similar positions in the scale of prestige".

Tumin (1953) draws our attention to the fact that "Social inequality in human society is marked by its ubiquity and antiquity. Every known society past and present distributes its scarce and demanded goods and services unequally and there are attached to the positions which command unequal amounts of such goods and services, certain highly morally toned evaluations for the society".

Davis and Moore (1945) in their systematic treatment of social organisations emphasise the point that "social inequality is both positively functional and inevitable in any society". They argue that society rewards people differentially according to the importance of the job they do. The important jobs require not only talent but a long period of training undertaken at some personal sacrifice, and the resultant material and social rewards are the basis for prestige and esteem. These rewards can be classified into "those things which contribute to a) sustenance and comfort b) humour and diversion c) self respect and ego expansion".

It can be seen from this that social stratification, based on the functions that a person performs in his society, will have far reaching implications for the environment in which he finds himself. There is far more implied than such factors as job, income, self assessed status or the status judgement of others. Kohn says:

"Members of different social classes see the world differently, develop different conceptions of social reality, different aspirations, hopes and fears and different concepts of the desirable".

The work of Kohn (1962), Bernstein (1958, 1959, 1960), Newson and Newson (1965, 1968), Klein J. (1965), Bronfenbrenner (1947, 1961) confirms this.

The ideas, perceptions, habits and values are part of the culture of the individual and are passed on from generation to generation by the successive influence of parent on child. Klein J. (1965) points out the subtleties arising from the interactions of attitudes, values, personality and child rearing which constitute a "way of life" -

"All social groups face some very similar problems of survival. For a way of life to survive over several generations the attitudes acquired in childhood must be confirmed or at least not contradicted by the experience of adult life. The experiences of adult life are affected on the one hand by the behaviour of other people both directly in personal interaction or more remotely by the aggregate consequences of such interactions variously called social forces, institutions etc. On the other hand they are affected by the personality of the adult who is living through the experience. His personality in terms of which he now experiences his world, has itself been formed by what happened to him in the past and so on regressively back to childhood, infancy and the womb. Experiences in early life have to be regarded as especially significant because they impinge on a more fluid, less rigidly formed personality structure. To round off the circle of the argument, the personality of most individuals will, by virtue of their parental role, provide a part - at first an overwhelmingly important part of the experiences of the next generation." (Klein 1965).

Social Class, as a concept, has been criticised by Wiseman (1964), among others, as being a unit too coarse and question-begging for productive enquiry and indeed where research in a particular area has become intense and defined the use of such a concept would be misplaced. It is nevertheless extremely useful to research workers who are making initial sorties into previously uninvestigated areas. It allows major relationships to be mapped out first, before specific areas of environmental influence are focussed on. The relationship of intelligence and social class may be quoted. From one or two criteria from which social class was assessed (i.e. occupation, income or education) important findings were made, and later led to more specific investigations of family pattern and parental behaviour (Douglas 1964, Wiseman 1964).

In the present research, where attempts are being made to look broadly at the factors in the environment which might affect creativity, the use of the concept of social class is appropriate. It is known that only broad pointers will be gained but it is hoped that these will serve to highlight productive areas for further research.

The Newsons' warning is as applicable to this study as it is to their own studies of class differences in patterns of child rearing. "When class differences are under discussion there is always the danger of making facile and sweeping generalisations. Each section of the community has its own

prejudices about the other sections, and it is only too easy to interpret the behaviour of people in other class groups in terms of existing preconceptions which may themselves have their roots in the defence systems of one's own group..... where patterns can be discerned we can be sure that it is not universal, even within the limits of a small social group: there are always the misfits and the independents".

3.2 Estimation of Social Class

It has already been pointed out that assessment of social class can involve a large number of both objective and subjective variables. Davis and Moore's argument leaves us in no doubt that occupation is one of the most important criteria in assessment though. Most of the earlier studies concerned with the links between educational progress and social economic level used this as the only criterion. Lindsay in 1926 "conclusively proved that success in winning scholarships varies with almost monotonous regularity according to the quality of the social and economic environment" (assessed by occupation of father). Gray and Moshinsky (1935) found that highly intelligent children of working class parents were under represented in secondary schools and higher education. Fraser (1959), French (1959), among others, produced similar findings.

With larger testing programmes other environmental factors were brought in as measures of class. From the comparison of a single measure of educational achievement with a single measurement of socio economic status, progress to multifactorial studies occurred. Factor analyses, multiple regression analyses and other complex statistical procedures were developed to investigate the interrelations of the complex social factors. The most common criteria, used in various combinations, were father's occupation, mother's occupation, father's and mother's education and length of education; there is no doubt that there is enrichment and accuracy of the research where several criteria are used to allot social class status.

The correlations between these criteria are, however, high. Brandis and Henderson (1970) who attempted to work out a satisfactory formula which would yield the best estimation of an index of social class from factor analyses give the following correlation: between father's and mother's occupation $r = 0.51$, between education of father and occupation of father $r = 0.63$; between education of mother and occupation of father $r = 0.52$, between occupation of mother and education of mother $r = 0.56$. The formula that Brandis and Henderson finally

produced as the most satisfactory was Social Class Index = (occupation of father plus occupation of mother) + 3 x (education of father and education of mother).

They concluded after an attempt to validate this index, that the occupation of father was clearly the most important single item in categorising a subject's social class.

From the practical point of view of the research worker where a single objective criteria is sought which would allow the child or family to be placed in a particular social class, Brandis and Henderson's finding was useful. Davis and Moore's argument substantiated Brandis and Henderson's findings that occupation was the most important single criteria for assessment. It has thus tended to be used in many important studies (Newson and Newson 1968, Fraser 1959, Floud 1953, Glass and Hall 1953). The sequential implications of occupation are only too clear. A man's job will be determined by the length of time spent in secondary and higher education; this will in turn affect his educational attainments. His job determines his salary, his prestige and his leisure pursuits. His education will affect his choice of wife who in turn is likely to have certain educational and occupational standards.

For the purpose of the present study therefore, father's occupation was taken as the single criterion of social class; it clearly reflects and relates to economic status, educational status and position in society and therefore gives an indication of the pattern of living of an individual.

There are several ways to classify occupation; the Registrar General's is the most widely known and used and is particularly useful because almost all occupations are listed and classified. It was originally prepared in 1911 by Dr. T.H.C. Stevenson and contains five categories:

i	Upper Middle Class	}	Professional,
ii	Intermediate	}	Administrative and Commercial
iii	Skilled Workmen and Clerical...	}	
iv	Semiskilled	}	
v	Unskilled	}	Manual

Moser and Hall (1954) stretch this classification to incorporate seven categories, and Hall and Jones (1950) do an interesting comparison with two other classifications showing the classes which have been combined in one code and not in another.

Standard Classification	Registrar General's	Social Survey Code
1	I	a
2		b
3	II	c
4		d
5	III	ef
6	IV	g
7	V	

Clearly for research which uses only a fairly small sample such as the present study, the requirements are that the classes should be a reasonably small number and that a distinction should be made between manual and non manual occupations.

Such requirements could be met by retaining Class I and Class II of the Registrar General's classification and splitting Class III: the latter incorporates skilled manual and lower clerical workers, and because of the distinct difference in outlook and aspirations of the two groups of people, such a split would be appropriate. As Kohn (1962) says: "being on one side or the other of the line that divides manual from non-manual workers has profound consequences for how one rears ones children".

Classes IV and V of the Registrar General's classification are retained. The resultant classification produced is therefore:

	Standard Classification	Registrar General's Classification	Present Classification
Combination of	1 and 2	I	A
Combination of	3 and 4	II	B
Split of	5	III	C and D
	6	IV	E
	7	V	F

A = Professional, technical, managerial and executive
B = Inspectional, supervisory and non-manual higher grade
C = Clerical routine
D = Skilled operatives
E = Semi-skilled operatives
F = Unskilled operatives

A large amount of work has been done with the standard classification, (i.e. Floud 1953, and Glass and Hall 1953) where categories have been collapsed -

usually the upper and lower ranges. However, similar classifications to the present one have been used in several studies, one of the more notable being Himmelweit (1966, 1967).

Social Class, defined and discussed here, is seen to be a concept having wide and diverse implications for many aspects of an individual's life. For the purpose of the present study however 4 aspects only are to be considered, as it is thought that these have the maximum amount of bearing on the development of the creativity attitude. Each of these aspects will be seen to be substantially different for the middle and working classes. They are:

1. Material factors.
2. Communication patterns whereby the culture is transmitted to successive generations.
3. Intellectual development.
4. Child rearing patterns.

3.3 Social Class - The Material Differences

Perhaps the most obvious difference between the middle class and working class child's environment is the nature and amount of material goods available to him. A man's job and income will determine where he lives, in what size house he lives, the size of his family, the amount of space which each child has to himself in terms of shared bedrooms, the literature and magazines coming into the house, his play material, the use of the local library, the children he mixes with, the type of school he attends and perhaps too the spacing of the family.

Psychological and sociological research in this area has been mostly confined to the relationship of such aspects to school attainments and measured intelligence. Fraser's (1959) findings are typical. With 408 children aged 10 years she found the following correlations: General book reading and I.Q. $r = 0.28$; income and I.Q. $r = 0.35$; family size and I.Q. $r = -0.40$; living space and I.Q. $r = 0.36$.

Van Alstyne (1929) examining the relationship between the Mental Age (M.A.) of 3 year old children and material factors in the home found the following correlations: M.A. and opportunity for use of constructive play material $r = 0.50$; M.A. and number of hours adults spend in play with child $r = 0.32$; M.A. and whether child slept alone in his bedroom $r = 0.54$.

It is clear from these and similar findings that the middle class child has a richer environment in which to function. By richer the implications go far beyond such things as comfort and easy access to material goods. With these comes a shift of attention away from the struggle for basics, (i.e. food, warmth and clothing). The middle class parents with material comforts assured can concern themselves with the spiritual and intellectual development of their children and see it as their task to be so concerned. Furthermore their own high intellect and linguistic skills are conducive to this. The material goods alone are not particularly enriching; it is only when a child is encouraged and given free reign to his exploratory and intellectual skills and when these are accompanied by parental explanations and stimulation that there is a real enrichment of the environment.

In conclusion, two main points emerge. The higher up the social scale the individual is then the richer in the material sense is his environment likely to be. The second point is that no matter how well endowed the individual is materially, if he has not the ability to interpret, understand and communicate then he is not going to gain maximum benefit. The chain goes thus:

good education of parent = good job = more material possessions = a richer environment for the child who is stimulated and encouraged to exploit it.

The importance of parental stimulation and encouragement and the way parental social class affects these variables is the subject of the next chapter.

3.4 Social Class - The Communication Differences

The importance of language as a key to the individual's whole psychology (McCarthy 1954) has only been recognised over the last two decades. Before that time research was only concerned with establishing crude age norms and developmental age norms for certain aspects of speech (Bayley 1933, Davis 1937, Gesell 1925, Shirley 1938, Young 1941, Heider and Heider 1940, Nice 1933). Some of the workers of this time looked at the difference in language development between the middle and working classes, carefully matching for measured intelligence; they failed to see, however, that the early linguistic experiences played a major part in scoring well in intelligence tests albeit with the aid of basic innate intelligence.

Later work focussed on establishing the role that environmental factors played in the development of language. Here the most dramatic examples were obtained with institution children who, deprived of adult contact, were

demonstrably inferior in their language development (Aldrich, Sung, Knopp 1945, Brodbeck and Irwin 1946, Fischelli 1950, Goldfarb 1943, 1945). Goldfarb further found that children reared for the first three years in institutions and tested in adolescence had failed to progress beyond very low levels of abstract conceptual activity. Taking a Hebbian (1949) view, Goldfarb declared that psychological deprivation in infancy, continued beyond approximately 17 months, the critical period, produced a lag in mental growth which is maintained even under new conditions of environmental stimulation. Skeels verified this (1966).

Twin studies, where the interaction time with mother is necessarily halved and where a non-verbal mutual dependency between the infants is often built up, is a fertile area for investigation (Davis 1937, Day 1932, Howard 1946). The general finding was that twins were retarded linguistically as compared with singletons (Davis); further it was demonstrated that the hazards of multiple births (i.e. brain damage) did not account for these differences (Davis 1937, Luria and Yadovitch 1959) in that on separation, with extra stimulation, the twins' retardation was counteracted.

With regard to the social class differences in language development, it would be expected that there would be substantial differences both qualitatively and quantitatively between the classes in view of their differing environmental experiences. Such an expectation arises from the established relationship between intelligence and social class and the dependence of intelligence on the individual's concepts and verbal understanding.

As early as 1847 Degarando stated that rich children understood more words and less actions whereas the poor child understood more actions and less words. The findings with regard to the effects of social class on language development present a consistent picture (McCarthy 1930, Milner 1951, Buhler 1931, Day 1932, Davis 1937). Middle class children not only develop speech earlier but use longer and more mature sentences at an earlier age than working class children. This difference tends to increase rather than to remain constant as the child gets older (a finding parallel to Jordan's (1932) work with intelligence). Interaction with adults was thought to be the prime variable in the development of language. Milner (1951) found, for instance, that families of high scorers on linguistic tests usually had breakfast "en famille" and indulged in a two way conversation before, during and after meals, whereas the low scorers had much less conversational interaction with the parents.

Apart from the speed of development of speech, members of the middle and working classes were seen to differ in the qualitative nature of their language. McCarthy 1954, Templin 1957, Loban 1963, and Deutsch 1964 among others found the working class parent to be a less adequate speech model for the child. They tended to be less fluent, used shorter sentences, had a less varied and less accessible vocabulary and tended to speak less to the child than the middle class parent. Such limiations must clearly affect the complexity and flexibility of the child's thought processes in that the child with an inadequate linguistic structure will have difficulty in seeing more than one alternative and in dealing with abstract ideas.

Bernstein is perhaps one of the most notable contributors to our knowledge of socio linguistics (1958, 1959, 1960, 1970). His theories, in part derived from the work of Luria and Vygotsky, have far reaching implications for many fields of psychology. Though sometimes vague in their presentation, and criticised for the extremity of view, Bernstein's theories have been valuable in stimulating new thought and research in a field, perviously so sterile.

Bernstein saw that members of different social classes had different modes of "cognitive expression". He distinguished between two "modes of cognitive expression" with regard to the perception of objects (a) "that arising out of the sensitivity to the content of objects," and (b) "that arising out of the structure of objects." These were seen as stages in a continuum rather than dichotomies though the particular "modes of perceiving" were seen by Bernstein to differ according to the social class of the individual. Further the modes of perceiving were seen by Bernstein to have implications for educational achievement. His model was thus

social class ----> cognitive expression ----> educational performance.

Bernstein claimed that the typical working class environment produced a resistance to formal education expressed by indiscipline, non-acceptance of teachers' values, failure to extend vocabulary and a preference for descriptive rather than analytic cognitive processes. This resistance, says Bernstein, was a function of "a mode of perceiving characterised by a sensitivity to the content rather than to the structure of objects". Bernstein thus saw the perception of the two social groups to be of a qualitatively different order - the working class paying attention to the structure and the middle class to the content. Perception involving the content of the object will clearly involve abstract concepts built up through the use of language. Bernstein says of

language "It exists in relation to a desire to express and communicate, consequently the mode of a language structure - the way in which words and sentences are related - reflects a particular form of the structuring of the feeling and so the very means of interaction and response to the environment". He suggests that these different language forms constitute more than the dialect difference in that the middle class family recognises and responds to a child as an individual and makes use of language structure to express the individuation, whereas the working class family does not.

Bernstein's distinction between public language, used by both working and middle classes, and formal language used only by the middle classes is of interest. The former is distinguished by the following features which tend to discourage discussion and tend to prohibit the communication of ideas and relationships requiring precise formulation. It is made up of short grammatically simple sentences. There is a simple and repetitive use of conjunctions, frequent use of short commands and questions, rigid and limited use of adjectives and adverbs, infrequent use of impersonal pronouns as subject (i.e. one, it) statements formulated as implicit questions which set up a sympathetic circularity (i.e. just fancy), statements of fact often used as both reasons and conclusion (i.e. do as I tell you), frequent use of idiomatic phrases and a low order of generality in symbolism. Bernstein concludes "Curiosity is limited in such a way so as to enhance the solidarity of the social relationship".

With a more complex language structure and an ability to perceive obscure and hidden aspects of objects or situations it becomes possible to have long term aims and to have the means to achieve them both in intellectual and emotional terms. The middle classes, according to Klein (1965), encourage the child to talk with some urgency, as an aid to developing foresight and time perspective. Klein makes a further point with regard to the advantages accrueing to the middle class person with a developed language structure. She distinguishes between behaviour evoked by sensory dominance (i.e. the here and now impact of sensory stimuli) and those actions evoked by central dominance(where remembering, reasoning and planning play an important part). The less central dominance there is (the less people think in words about what they are experiencing), then the less people are likely to be affected by what is not actually at present part of their experience. Thus the less likely it is that their actions will be affected by the consideration of factors which are obscure, general, abstract and hidden in the future.

It can be seen that the working classes with their less developed use of language are handicapped on many fronts. The detrimental effect that limited language will have on the creative thought of an individual is implicit in that the individual neither has the maximum use of his past experiences or the resources to see hidden functions in a situation or object. The chances of disparate experiences coming together in a new solution are slight.

A further disadvantage for the working class child and adult arises from the social implications. Where speech, curiosity and interaction with adults is not a rewarded activity a child learns to inhibit his natural propensities. He develops a set pattern of behaviour which sets a basis for a rigid inflexible personality. Such traits will automatically act against creative thinking.

As Luria (1963) says, "Where speech is retarded, there must also be under-development of all those aspects of mental activity which depend on the acquisition of speech." "Where language is restricted, perception is restricted, obscure and hidden functions are ignored, past experience cannot be labelled and thus cannot be easily kept in mind and the relationship of cause to effect is not perceived. Without language all thinking is limited."

Creative thinking in particular will be dependent on the concepts and associations built up through the use of language, in that before the creative product or solution arises in the unconscious incubation period, a preliminary period of hard work, practice and preparation involving the learning of skills, habits and capabilities must occur. It is only after the subject experiments freely with his data and concepts, throwing up hypotheses, suggestions, fantasies, images and comparisons that there comes a suitable juxtaposition of ideas resulting in the solution.

In talking about the relationship existing between language and creativity, one is also much concerned with the qualitative nature of the linguistic concepts built up; language is after all the vehicle for the transmission of culture from one generation to the next. The way the environment is perceived, interpreted explained and valued will determine solely the way the child himself views the universe. He learns modes of behaviour appropriate to the valued aspects of his environment and his personality is formed according to the pressures administered as rewards or punishments.

Sex Differences in Linguistic Development

Most research workers have demonstrated that girls develop speech earlier

standard
than boys and that in every phase of language (articulation, word usage, length and complexity of sentence, etc.) the girls maintain their superiority right up to the 10 year level (Davis I.P. 1938). This female superiority was further found in the speech of mentally retarded children (Mead 1913). In the distribution of speech defects in the population (Sirkin & Lyons 1941) speech defects were found to be twice as frequent among boys.

In considering individual differences in behaviour there is a constant problem in determining to what extent the differences are a result of the child's initial bias and to what extent they result from environmental influences. With regard to language development Bowlby (1970) draws our attention to Moss's work (1967). The latter has shown that there are great variations from one infant to another in time spent sleeping and crying during the early months. On balance Moss found boy babies to sleep less and cry more often than girl babies. As a result of this boy babies up to the age of three months, says Moss, receive on average more social attention and more contact (holding or rocking) from their mothers than do girls. How this affects future interaction with the mother is unknown but it would be surprising if it were to have no effect in so far as interaction with an adult figure is one of the most important factors in the development of language and intellect (Brandis, Bernstein et al 1970, Milner 1951, McCarthy 1930).

With regard to the language difference between the sexes, Davis (1937), Young (1941) and Brandis and Henderson (1970) have found that female superiority is most marked in the working classes. Bernstein suggests that this occurs because of the role of the working class girl. He said that girls are more likely to be called on to control younger siblings than boys and when doing so are less likely to use physical coercion; they are thus forced to rely on verbal exchange. They also have a more complex role in the working class marriage often being put in the position of mediator between parents, a role which involves a reasonable use of language. They are also less tied to their peer group than boys, where activity rather than the spoken word is the rule.

An interesting finding from the same piece of research (Bernstein 1970) was that in the middle classes it appeared that mothers, from their own reports, treated their daughters more coercively than their sons and were less likely to offer explanations to girls than to boys. Whether this finding is a reflection of the cultural pattern, in that girls are being socialised into being more submissive and into having a more limited cognitive perspective, or whether

this is a result of the Electra situation where mothers do not experience the rivalry with their sons that they do with their daughters, is a matter for speculation.

In summary the findings indicate that girls develop speech earlier than boys perhaps as a result of innate differences in abilities. Language is more developed in girls than in boys up to secondary age anyway; they are more verbal than boys and it is the cultural expectation that this should be so. Whether in fact the boys' speech, though sparse, is nevertheless just as packed with facts and attributes has never been investigated. The different roles that the two sexes play in family life particularly in the working classes is reflected in the girls' greater need to develop and use language in that they cannot rely on brute strength to get their own way nor is it expected of them. In the middle classes, boys appear to be treated more tolerantly and they are reasoned with more than girls.

The implications of these findings for creativity are the following. Although the middle class girls develop speech earlier than middle class boys, the latter experience more mother child interaction, are offered more explanations and are treated less coercively than girls. They are thus likely to have their curiosity kindled so that they build up cognitive and exploratory skills to a greater degree than girls. In the working classes, however, the girls are at an advantage. They attain speech earlier and generally have more developed speech forms (at least up to the age of 10 years). They also have a greater opportunity to practice and use their verbal skills than boys in the role they have to play in family life. It would seem therefore that this enhanced verbal ability will enhance the likelihood of their being creative. This is one of the themes to be explored in the present research.

3.5 Social Class - Intellectual Differences

In looking at the relationship between social class and intelligence we have a large and reliable body of facts indicating that however social class is defined there is a direct relationship between these two variables: low socio-economic status goes with low I.Q.. The major longitudinal studies provide relevant data. (Shuttleworth (1940) analysing the Harvard Growth Study, Bayley and Schaefer (1964) with the Berkeley growth study, McNemar (1942), Seashore Wesman and Doppelt (1950).) In the USA, Herrick(1941) found the correlation between I.Q. and socio-economic status to be 0.35. There was typically

a difference of 15 to 25 I.Q. points between children from professional parents and children of labourers. This superiority is based on both inherited factors and on the "enhancing and stimulating" middle class environment. With regard to the inherited factors Goodenough (1940), Jones (1954), Thompson (1962), Burt (1961), Burt and Conway (1959) and Warburton (1959) maintain that the working class boy of high intelligence rises to the higher social classes marries a girl of similar intelligence thus passing on the double superiority to his children. Whereas the low intelligence child born into the middle class family drifts downwards socially. The middle classes thus remain consistently of high intelligence, generally passing on this genetic superiority to their offsprings. The middle class parent by his own education and intellect tends to maximise his child's inherited potential laying stress on & encouraging cognitive and linguistic skills.

It is argued in this thesis that creativity is an attribute with both cognitive and personality implications. It is further suggested that it is an attribute learned, in part, as a result of early experiences.

Considering creativity as a reflection of cognitive functioning first, it is clearly important to ascertain how far creativity is likely to be affected by environmental factors. Whether one takes the view that the general factor only accounts for the correlations between measured creativity and intelligence or whether one takes the view that creativity exists as a separate group of factors, the fact that basic g is going to affect creative ability (except perhaps for the individuals of very high intelligence) cannot be denied. If this is the case, then the factors which affect intelligence will also be operating for creativity.

Burt (1971) and Eysenck (1971) among others have made a firm case to support the idea that hereditary factors play a large part in determining intelligence. Eysenck argues, with facts to support his argument, that roughly 80% of the total variance is due to genetic factors whilst the other 20% is dependent on factors in the environment (i.e. language development, concept formation). Burt (1955) had made similar predictions based on (a) the study of institutional children where the environment was said to be constant for all children but where intelligence varied and (b) twin studies where the hereditary factor is said to be constant (other twin studies are Freeman Holzinger and Newman 1937, Shields 1961, Newman 1942).

The maximum effect which extreme deprived or optimum stimulating environment has on intelligence appears to be in the region of 20 I.Q. points. Demonstrations of changing functioning are obtained from studies of institution children transferred to normal families (Burks 1928, Freeman Holzinger and Mitchell 1928) and from studies of the subnormal and deprived whose environment becomes enriched (Tizard 1960, Clarke and Clarke 1965, Kirk 1958, Gray and Klaus 1965). Where there was enrichment of the environment both in cultural and emotional terms, a substantial change in functioning occurred. Gray and Klaus (1965), e.g., working with mildly subnormal negro children living at home, demonstrated that a period of pre-school education produced a rise in functioning so that the average measured I.Q. rose from 60 to 95.

Sex Differences in Intellectual Development

A large amount of work has been done on the differential abilities of the sexes. The general view deduced from the main body of research is that neither sex is much brighter than the other. In many of the tests used to measure intelligence those items which in the construction of the tests showed obvious sex differences were discarded.

Where tests were constructed disregarding these factors several sex differences emerged. Girls were found to gain slightly superior scores overall, though there was a great deal of overlap between the distribution of boys and girls scores. Part of this female superiority might be due to the large verbal content of the tests used in that it is known that girls are better than boys on verbal items. Girls were found to be better on memory items but boys did better on the numerical and spatial tests.

The verbal superiority of girls is thought to arise for several reasons. First as we have already seen girls learn to speak earlier; this may be an innate difference. Secondly, Schuells studies (1946, 1947) suggest that girls have a more emotionally secure attitude than boys. This may be a reflection of the fewer demands made on girls in their socialisation. A third reason is that the expectations and training of the two sexes vary considerably from the very early years. Boys are expected to interest themselves in manipulative and practical tasks whilst girls are expected to indulge in chat and verbal play.

A further finding of interest is concerned with the greater variability of mental traits among men than women. There is a generally held view that there is a greater preponderance of men both in the ranks of the defective and of the genii.

Here again evidence is conflicting; Terman (1926) e.g. found in his gifted population that there were 325 boys to 291 girls, whereas Lewis (1948) found 146 girls to 100 boys.

The most important finding with regard to the study of creativity is the overwhelming majority of men in the ranks of genius. This is clearly not because they are more intelligent, so we are faced with the fact that environmental factors must be producing this phenomenon. It is proposed here and elsewhere (Heim 1970, Greer 1971) that this phenomenon is almost entirely due to the lack of opportunity for women to fulfil their potential and to develop the skills, aspirations and attributes required for creativity.

3.6 Social Class - The Differences in Child Rearing Practices

The results of the socialisation process, occurring to some degree throughout life, is most obvious in the transformation of the helpless infant to the school age child. This process involving the interaction of the developing child with parents, siblings, relatives and peers involves both intentional and unintentional moulding of his behaviour. The most obvious intentional training occurs in the interaction of child and parent, with the latter intent on building up in his child a personality structure which is based on his esteemed values. The child, dependent as he is on the love of his parents, learns what actions bring rewards, approval and acceptance and those which invoke punishment and rejection. If the rewards and punishments are consistent over a short period of time the child internalises what he has learned, and the behaviour patterns become established personality patterns, remaining regardless of the presence of his parents. These child rearing practices differ as do linguistic and intellectual functioning between the middle and working classes. Though perhaps less well defined than they were 100 years ago, the differences are still significant.

Social Class Differences

Most information on child rearing has been obtained from the bulk of the population - the stable working class - whose values in the past have tended to be cyclically consistent - generation following generation.

This consistency arises from their limited education, jobs and reading habits and choice of T.V. programmes all of which preclude their contact with controversial opinion and literature on child rearing. Further, their close contact with the extended family - with grandparents taking a large part both in caring for the children and in giving advice - ensures that the familial patterns are continued.

The middle class, in contrast, tend to change their patterns from decade to decade. Once termed "inhibited and restricted" in comparison with the "happy go lucky working class" (Davis and Havighurst 1948) they are seen 10 years later by Sears Maccoby and Levin (1957) as "permissive in their methods seeing no one particular method as right". This changeability which is particularly evident now, reflects the concern to follow the drift of "expert opinion". The whole subject of rearing children is viewed as problematic with no one method being right.

In spite of the flexible approach of the middle class parent, there are certain underlying attitudes and value systems which are essentially different from the working classes. These attitudes, as Kohn (1959a & b, 1962) makes clear, are reflected not only in the way children are reared but also in every aspect of the individual's life. They arise because the conditions of life in the two classes are intrinsically different including occupational requirements.

Kohn (1962) viewed behaviour as the end link of a chain thus:

Social Class ----→ conditions of life ----→ values ----→ behaviour; and explained the three major class differences in parental behaviour from aspects of occupation. These serve as a basis here for a broader discussion of child rearing practices.

1) Manipulation of concepts v manipulation of objects

Kohn notes that middle class occupations are concerned with manipulation of inter personal relations, ideas and symbols while working class occupations are concerned with the manipulation of things. This dichotomy is reflecting to a great extent social class differences in the use of language (Bernstein 1958, 1959, 1960).

Outside the job situation in daily life, the working classes are found to be influenced by objects and material possessions rather than by abstract concepts and abstract values. Whilst it must be agreed that security and stability of income is not so certain for the working classes, they nevertheless view the amount of money earned and what material goods it can buy, above such things as "job commitment" and satisfaction. The middle class individual however appears to see these latter factors as of prime importance in choosing a job. The objects v. concepts dichotomy is manifest in the ideals that parents seek in their children. The working class parent (Kohn 1962, and Duvall 1946) values outward respectability, seeing neatness, cleanliness and obedience as the three most important virtues. The middle class parent, being more

concerned with the child's motives and feelings, values abstract ideals, i.e. a keenness to learn, to love and be happy. Obedience is not particularly valued by a middle class parent in that it would be inconsistent with curiosity, a valued attribute. In socialising the child the concepts v. objects dichotomy is evident; the working class parent is most concerned with the overt act, imposing constraints so that the child fears to violate external rules, whereas the middle class parent is most concerned with the child's motives in doing a particular act, punishing not for the act but only if the motive is bad.

2) Self Direction v Supervision

This second dichotomy reflects the amount of freedom the individual has in his job to determine what he has to do and how he should do it. Middle class occupations, Kohn says, entail more self direction while working class occupations entail more direct supervision.

Self direction is one of the fundamental characteristics to be instilled early in the middle class child. It is a characteristic associated with internalised standards of conduct, which middle class parents have sought to develop in their children from the start. The emphasis is on the child understanding why certain things are asked of him and this requires a certain amount of skill in the use of language. Self direction also implies the certain knowledge that actions in the present bring about events in the future: Bernstein (1958) makes clear to us that this knowledge is again dependent on the way language has enriched and elaborated the significance of objects and events for the middle class child.

Klein (1965) further points out that unless certainty of reward has been a consistent part of training as it is in the middle class home then it is unlikely that the child will be able to postpone gratification in case there was no reward (i.e. in the working class family where there is inconsistent discipline). The working class parent, being less child orientated, less aware of the child's needs and (Himmelweit 1966,'67, Bernstein 1958, Klein 1965) having a simpler language structure tends not to exploit the child's perceptions and experiences so that he understands future implications. Explanations beyond simple statements are not offered by parents when disciplining the child. Rules of behaviour are not elaborated. The child fails to develop an internalised system of his own whereby he can understand the world, and control his behaviour and orientate his behaviour to long term goals. In adulthood he is dependent on external forces - the law, peer group pressure and supervisors - to act as controls.

3) Individual v Group Action

Kohn's third point is concerned with the fact that getting ahead for the middle class depends on the individual's own action whereas for the working classes there is a great dependence on group action. This aspect has early roots in the socialisation of the child in that as we have already indicated the middle class parent individualises his child from the start. He is made the subject of the parents' conversation, minute differences in his behaviour are noted and commented on so that he becomes aware of his own behaviour and his own progress.

Bernstein differentiates between the arbitrarily taught child, reared on categoric statements and impoverished explanations and the child brought up with the problem solving attitude. The former - invariably working class - relying on his parents to formulate rules fails to develop the independent ability to formulate his own values and rules. He has not been encouraged to query the rules handed to him and he moves easily into a job situation where he accepts the "rules of the management" or the unspoken rules of his peer group. His dependence on rules formulated by other people will make him need and want to work in a group.

The middle class child reared with the problem solving attitude, however, has learnt to control and set his own rules and be comfortable in his individuality, naturally expecting that he has a certain degree of flexibility in the way he will carry out his job in adulthood.

The discussion of the three differentiating features of the middle and working class job makes it clear that those values held by adults in order to perform their jobs effectively are manifest in many aspects of life. In looking at the way child rearing practices are affected we see that the overriding features of the working class way of life surrounds the concept of respectability in the eyes of others from the same community, security and a decent standard of life. Value is placed on conformity to external standards, i.e. neatness, cleanliness and obedience, with the resultant neglect of understanding the child's underlying motives and building up of an internalised standard of conduct whereby he could be a controller of his own destiny. Middle class parents value internal standards of conduct, i.e. consideration, curiosity, happiness and self control. They tend to rear their children so that they are able to be independent by developing those skills which will enable them to determine their own fate.

Methods of Training - Parental Permissiveness

Brief reference has been made to the differing methods used by parents to train

their children and mould their personalities. Methods used are numerous - corporal punishment, scolding, withdrawal of privileges, isolation, psychological methods involving priase and blame and withdrawal of love are the most common. Different cultures favour different techniques (Erikson 1951). Although most parents in Britain use all of the methods some of the time, the proportion of the types used most of the time seem to vary substantially between the classes.

Perhaps the most clear cut finding is in the use of physical punishment (Newson and Newson 1965, Klein 1965, Kohn 1959, Bronfenbrenner 1947, 1961). Beating and smacking is by far the most usual method of discipline in the working classes, with ridiculing and withdrawal of privileges being the next most favoured method. In the middle classes preference is given to reasoning, isolation to induce guilt and threat of withdrawal of love (Bronfenbrenner 1961). The beating v talking out dichotomy is further evidence of the effect of the objects v concepts dichotomy discussed earlier. Newson provides us with evidence of the percentage of mothers who smack their 1 year olds:

Social Class	I & II	III	III	IV	V
No smacking	56	38	32	42	35
Smacking for danger	5	9	8	4	7
Smacking for other offences	39	53	60	54	58

In spite of the indications from this table Robb (1954), Goldberg (1958) and Newson and Newson (1965) observed that working class infants up to the age of 2 years get rather special treatment in comparison with the harsh treatment they receive after this age. Husbands on night duty and overcrowded housing means that the crying baby is picked up and cuddled, thus experiencing "a rather warm close relationship with the mother" (Robb). After the age of two, his treatment will depend on whether he is born into a home where training is undertaken or into a home where a seemingly "permissive" regime operates. In the latter case, no consistent attempt is made to socialise the child. His play is unsupervised and he becomes the victim of other children's aggression. The parent makes no attempt to modify his behaviour except in so far as it interferes or disturbs the parent. Even then if there is a chance that discipline will cause the parent even more discomfort (i.e. in screaming fits) it will not be undertaken at all. In the working class home where training is undertaken, the two year old wakes to harsh reality; the world ceases to be a gratifying

place. The advent of speech is taken to be the advent of understanding and the child receives harsh punishment for unacceptable behaviour. Further he is not offered explanations which might enable him to build up an understanding of the situation for future reference "Don't do that, because I say so" is the typical order.

The middle class parents in contrast, intent as they are on building up in the child a well developed super-ego, use the most powerful methods to do it. From the start they set about developing a warm and gratifying relationship with their children (being more affectionate and child centred than working class parents: Bronfenbrenner 1958, Bernstein 1970). This warmth plus the minimum of training up to the age of two years, ensures the maximum dependency of the child on the parent. Then when training proper starts, withdrawal of love is the technique of punishment used, and with this withdrawal goes much verbalisation of feelings and explanations, on which the child can base an understanding of what he has done wrong.

High dependency followed by love oriented discipline, even in primitive societies (Whiting and Child 1953) is a combination maximising the development of internal controls and conscience, and as Secord and Backman point out (1964) unless both conditions are fulfilled conscience development is impaired.

That the methods used by the middle classes are time consuming and require foresight, planning and patience there is no doubt. The child develops an internalised system of rules whereby he understands his universe. This allows him to be independent to a degree from his parents, and to have the resources to cope with new situations so that he does not need to refer back to authority for direction to the same degree as a child without an internalised system.

Sears Maccoby and Levin (1957) found in their study that some mothers were strict and others permissive - in all respects. At the strict extreme, a mother would typically toilet train severely, make strict demands about neatness, ordiliness, table manners, obedience, expressed aggression towards siblings and parents and doing well at school. There would be firm restrictions on making noise, playing in the house and dependency. There would be little permissiveness for sex play, nudity and masturbation.

Sears et al and Bronfenbrenner found that mothers at the more privileged end of the social scale were lenient with regard to all these aspects of behaviour. "They are more tolerant of the child's expressed needs and less punitive in

their approach but also expect more from the child in terms of self control and willingness to please" (Bronfenbrenner).

Berstein's, and Brandis and Henderson's (1970) recent and interesting work confirms the points made here. Looking at mother-child (pre-school) relationships and communication patterns, they prepared a maternal index score gained from (a) parental responsiveness to the child, (b) the fluency of coercive and threatening forms of control, (c) the amount of explanation offered when controlling and (d) the degree of child centred rather than self centred play indulged in when playing with toys. The correlation between social class and maternal index was high ($p = 0.57$). Middle class mothers were more responsive to their children, were more child centred when indulging in toy play and most important were found to use coercive, threatening and imperative forms of control less often than working class mothers. Further, they offered explanations when they did control their children.

These findings have some implication for our study of creativity. Working class parents tend to be strict with regards to the child's impulses (see Sears et al's list) and offer few explanations. In so doing they are cramping the child's experiences. Sustained curiosity is not fostered or rewarded by working class parents, as answers to questions rarely lead beyond the object or further than a simple statement about the object. The child's limited set of internal controls (conscience) means that he remains dependent on external forces to direct his behaviour. In novel situations he has few internal resources available to direct his behaviour. His strict rearing with an emphasis on outward conformity and repression of all instinctual impulses will make for a system of rigid defences. His creative potentiality must indeed by cramped.

A middle class child's experiences are in contrast. His curiosity has been encouraged. His parents are permissive with regard to his expressed needs and are more lenient in controlling him, i.e. he would thus tend not to build up a rigid defence system. Where discipline does occur it will be of the love oriented type and is accompanied with explanations from which the child builds up a well defined super-ego. This internalised system of rules, providing it is not too rigid, makes it easy for him to cope with unknown and ambiguous situations. He is not too fearful of experimenting nor is he dependent on others to formulate his patterns of behaviour.

As Klein says "the further one moves from the lower end of the social scale,

the more strongly this evidence suggests a more permissive but also a more discriminately permissive environment and an increase of opportunity for the development of a potentially richer and more creative personality".

Sex Differences in Child rearing

We have argued that the socialising experiences of the middle class child would fit him better than the working class child to think creatively. We do know however that this general view is complicated in that the socialising experiences of the two sexes in both middle and working class differ. It thus becomes necessary to explore the implications of these differences.

There is no doubt that boys present more problems in growing up than do girls. They are physically weaker in childhood and more often display learning difficulties, emotional problems and delinquency. Though physiological factors may in part account for these differences it is clear that different upbringing and different parental expectations of the two sexes have an effect. We have argued that the building up of a well defined ego and super-ego by the techniques of love-orientated discipline is necessary for goal oriented, adventurous and creative behaviour to develop. American research (Bronfenbrenner 1961, Kohn 1959, 1962, Sears Maccoby and Levin 1957) however indicates that these techniques, employed in an increasing degree by American middle class families have negative as well as constructive aspects if carried out beyond an optimum level. While fostering the internalisation of adult standards and the development of socialised behaviour, they may also have the effect of undermining capacities for initiative and independence due to the overwhelming guilt feelings aroused when the child carries out unapproved actions. Sears, Maccoby and Levin, and Bronfenbrenner, in reporting stronger internal controls for females than males, verify this point. Bronfenbrenner observes that girls in general are exposed to more affection and less punishment than boys but at the same time are more likely to be subjected to love oriented discipline encouraging internal controls. Thus girls are found to be more obedient, cooperative and in general better socialised than boys at comparable age levels. Bronfenbrenner also found that girls are more anxious, timid, dependent and sensitive to rejection. The latter traits, though fitting girls admirably for the traditional female role in our society, clearly would be detrimental to creativity. Boys on the other hand, were seen to be disciplined more often, given less affection and were more likely to receive physical punishment than girls. Thus they tended to be less well socialised but yet retained the characteristics of initiative and independence

well suited to creative behaviour. American studies indicate that the further down the socio-economic scale one goes, the more evidence there is for contrasting parental attitudes to boys and girls. Bronfenbrenner's results show that it is most common in the working classes for boys to get more punishment than girls whilst the latter received greater warmth and attention and the risk of over protection. The Newsons' 1968 study of 4 year olds in Nottingham, England, substantiated this finding as a general phenomenon with girls being smacked significantly less than boys.

In general, it appears that parents have severer expectations for their sons than for their daughers. In the working classes these expectations might be expected to centre around physical toughness though there is no research evidence to verify this. For the middle classes Aberle and Naegale's (1952) study of paternal attitudes to 29 boys and 22 girls is of interest. Boys consistently caused more concern than girls and the areas of concern centred around "prognosticators of adult traits which will interfere with success in middle class occupational life", i.e. lack of initiative, insufficiency of aggression, over conformity, excitability, excessive tearfulness. Girls were far less frequently objects of concern, satisfaction focusing strongly on girls being nice, sweet, pretty, affectionate and well liked.

The implications for our study of creativity are difficult to draw out. We know that too much physical punishment in a restrictive environment must sap a child's drive and initiative. We know, as well, that too much "guilt producing" punishment (i.e. withdrawal of love) also diminishes initiative and self sufficiency. Thus the working class boy who is likely to be punitively reared seemingly would be less likely than his indulged though guilty sister to be given the opportunity to experiment and show initiative, except perhaps in the physical sphere, for fear of admonishment and punishment.

For the middle classes the evidence is slightly clearer. Bernstein's study indicates that mothers give freer reign to their sons' impulses than their daughters' and are more prepared to offer explanations. Such handling bodes well for creativity. Middle class girls however tend to be over-socialised, timid and sensitive to rejection having experienced a more coercive and less stimulating relationship with their mothers. Further we know that parents expect more from their sons in the way of independent, competitive and aggressive characteristics than their daughters. Though these demands appear harsh they do appear to encourage the development of characteristics highly relevant to creative behaviour.

That both Bronfenbrenner and Kohn have observed a narrowing of class differences in parental handling and a narrowing of sex differences in the United States culture is noteworthy. Particularly in the middle classes the mother has been observed to take the disciplinary role and she has been seen to use love oriented techniques with both sons and daughters. This according to Bronfenbrenner has meant that boys were tending to become less self sufficient, less independent and to show less initiative. Such patterns of child rearing may indeed be expected to have a deleterious effect for the boys' future competitive and creative role in society if we take the view that these characteristics are essential ingredients of the creative attitude.

The observed relinquishing of competitive values by a substantial portion of the younger generation may well reflect this change in child rearing practices. Taken to its conclusion it might seem that we could pass through a creatively sterile period in the Western world. It is interesting to note however that whereas boys are relinquishing the typical "masculine traits" we are seeing at the same time the upsurge of a body of dominant, demanding and aggressive women who blame their sex's historical lack of creativity on its suppression to the female mould (Greer 1971, Heim 1970). The advent and acceptance of these "rebellious" characteristics in women may redress the balance in the creative output of the two sexes or indeed may produce a reversal with women making a higher and more significant creative contribution than men.

These trends observed most obviously in the United States, will be most apparent in Britain in the offspring of the present marriageable generation now in their 20s, in that Britain tends to follow American sociological trends some years later. For the present research where 9 year olds were investigated it is unlikely that we will observe these trends to any great degree and it is thus possible to propose the following hypotheses:

Hypothesis 2:

(a) Creativity scores will be greater in middle class than in working class children;

(b) Class and sex will both affect creativity such that middle class boys will be more creative than middle class girls, and working class girls more creative than working class boys.

Hypothesis 9:

Children who see their parents as permissive will be the most creative.

Hypothesis 10:

The child's view of his parents disciplinary handling of him will differ according to the sex and social class of the child.

- Middle class children will see their parents as more permissive than Working class children.
- Middle class boys will see their parents as more permissive than middle class girls.
- Working class girls will see their parents as more permissive than working class boys.

Chapter 4. Personality Correlates of Creativity to be Investigated.

In this final chapter consideration is given to three defined areas of functioning to be investigated experimentally. All three are closely interlinked and all appear to reflect a creative attitude. They are (1) tolerance of ambiguity (2) openness to experience (3) categorising behaviour.

4.1 Tolerance of Ambiguity:

This is an attitude uninvestigated in relation to social class or creativity. The theoretical writers (Koestler 1964, Mednick 1962, Poincaré 1924 et al) in discussing creativity subjectively, all have indicated the necessity of tolerating the complex, indefinite and conflicting situation which occurs when ideas are combined and reshuffled in the presolution phase of the creative act. It remained for Frenkel Brunswik (1948, 1949a & b) to label and isolate this concept as an aspect of personality. She did this as a result of her work with Adorno et al (1950) on racial prejudice where it was found that prejudiced individuals tended to exhibit certain stereotyped personality traits collectively referred to as an "Authoritarian Personality". Many of the characteristic traits (i.e. rigidity, concern with power, little freeflow and communication between the conscious and unconscious, repression of sensuality, concern with external success and intolerance of ambiguity) are those which, as we have seen, seem also to be typical of the uncreative individual.

Tolerance of Ambiguity - A Class or Sex Linked Variable.

Whether this attitude of tolerance of ambiguity is class or sex linked is a matter both of surmise and reasoning with regard to the linguistic, cognitive and behavioral factors already discussed. Most important to the present discussion is the link that Frenkel Brunswik made between tolerance of ambiguity and the psycho-analytic concept of ambivalence. The person who can accept

ambivalent feelings with regard to his parents without becoming too anxious, she says, is the person who tolerates ambiguity. Those people who dramatise their parents making them all good or all bad are unable to tolerate the existing ambivalence within themselves and so they deny it. Frenkel Brunswik found that intolerance of ambiguity arises primarily as a result of experiencing parents as too threatening, overwhelming and unintelligible. She argues that intolerance of ambiguity is manifested in many aspects of an individual's functioning (i.e. perception, cognition etc.) saying, as examples, that the intolerant individual would be unable to see things in two or more ways and would be unable to tolerate conflicting value judgements. In the words of Postman Bruner and McGuinnies (1948) "the unconscious pushes out uncertainties to narrow the cognitive map to rigidly defined tracks " (perceptual defence).

Frenkel Brunswik's own investigations (1949b) were carried out in the perceptual field by presenting ambiguous pictures to her subjects. The same method was adopted in the present research.

Frenkel Brunswik's theory throws much light on our discussion of the relationship between social class and tolerance of ambiguity. We have seen that working class children, particularly boys, are subject to harsh discipline. Further, we know that the working class parent tends not to explain to the child why he is being punished nor is the method of disciplining used consistent. Thus the basis for the attitude of tolerance of ambivalence is set. The child finds the punishment "too threatening, overwhelming and unintelligible" (Frenkel Brunswik). The feelings of hate for the parents are likely to remain unexpressed because the parents are known not to tolerate expression of aggression towards themselves. The resultant conflict between hate and love, arising from the child's dependency, causes anxiety from which one of the set of feelings becomes repressed. The working class child would thus be expected to be less tolerant of ambiguity than the middle class child. Frenkel Brunswik herself draws attention to one particular social group - the socially marginal middle class - and makes an exception to this generalisation. This group of people who are striving to distance themselves from the working class, are, Frenkel Brunswik says, highly intolerant of ambiguity in that they are insecure in their social positions and are intolerant of ambiguity and deviancy from middle class values.

Sex patterning may also be predicted. Earlier discussion reveals that the

working class girls are likely to be subjected to less harsh punishment than boys and are treated somewhat more permissively. It would seem possible that the negative feelings aroused towards the punishing parents would be less overwhelming for girls than boys and that in addition the expression of hate or anger would more likely be tolerated. It would seem therefore that working class girls would be more likely to be more tolerant of ambiguity than working class boys.

In the middle classes, girls appear to be less harshly punished than boys. However their love oriented discipline tends to make it difficult for them to direct their felt aggression towards their parents. Instead it tends to be directed towards themselves (Miller and Swanson 1960). Further negative aggressive feelings are less well tolerated from girls in that their expression would tend to be alien to the "pretty, sweet and docile" ideal.

Middle class boys, though treated more harshly than girls, are expected to be aggressive and middle class parents tolerate the expression of aggression even if it is towards themselves. Boys would not tend to find the punishment received overwhelming or threatening, in that it would not be as harsh as that given to a working class child, nor would they see it as unintelligible, in that they would have received adequate explanation as to what was wrong with their behaviour and why they were receiving punishment. Further their expressed ambivalence after punishment would be tolerated.

These facts allow us to propose the hypotheses:

Hypothesis 5:
Children who are tolerant of ambiguity will be creative.

Hypothesis 6:
A child's tolerance of ambiguity will differ according to his/her social class and sex.

- Middle class children will be more tolerant of ambiguity than working class children.
- Middle class boys will be more tolerant of ambiguity than middle class girls.
- Working class girls will be more tolerant of ambiguity than working class boys.

4.2 Openness to Experience:

This second characteristic, openness to experience, is closely linked with one

aspect of tolerance of ambiguity through the role that repression plays in narrowing an individual's experiences. We have seen from introspective accounts (Poincaré 1924, Wallas 1926) the descriptions of therapists (Rogers 1959 and Kubie 1965) and experimental work (Barron 1963, Weisberg and Springer 1961, and MacKinnon 1962) that an overriding feature of the creative individual is his perceptual openness. This allows the greatest possible richness of experience into the perceptual system even though discord and disorder results. Both Kubie and Rogers indicate that this occurs when there is an absence of defences, resulting in a free flow of undistorted stimuli "between the conscious, preconscious and unconscious" (Kubie). This has been termed by Rogers "openness to experience" which is reflected in the individual's contact with his own inner feelings about situations and people.

The ability to be "in contact with feelings" in a practical sense is reflected most clearly in the expression of ambivalence about situations and people. It is further reflected in the individual's use of repression, i.e. in remembering unpleasant or emotionally arousing stimuli. Lastly, it plays a part in "coping" with unpleasant material. All three of these aspects are investigated in the present research.

4.2.1 Aggression

The expression of the negative feelings in ambivalence is usually interpreted as aggressive behaviour and such a term has always had an unpleasant tone to it. Sears, Hovland Miller and Neal (1940) define it as "an impulse to destroy, damage, torment, retaliate, blow up, humiliate, insult, threaten and intimidate".

Recently there has been a change of emphasis with a stress on the positive features of aggression. Indeed the Latin word from which aggression originates - aggredior - a going to or towards a thing - has a positive tone. In the present research, too, we look at aggression as a positive and powerful urge to self realisation. We follow Lydia Jackson (1954), who argues that the mentally healthy individual is characterised by having "an innate, forward driven urge, expressed in initiative, enterprise and positive assertion". The implications for creativity are clear.

It is known that the innate positive force of self realisation can be distorted into criminality, vandalism and delinquency, and it seems almost certain that such distortions occur as a result of early family relationships. The neurotic individual conceives of self realisation in terms of mutual hostility with all that it involves (i.e. the inner mechanism of defence, the strong sado masochistic trends and the canalisation of self assertion into asocial channels). The normal person conceives it in terms of mutual goodwill and cooperation with all that it involves in social adaptation and positive achievement.

There are five main factors in the parent-child interaction which, according to Secord and Backman (1964) have been found to produce overt aggression in a child. These are:

(1) a high degree of frustration (Dollard et al 1939);

(2) the practice of following aggression resulting from frustration with soothing and comfort. Thus aggression is reinforced and fostered by the process of operant conditioning;

(3) direct tuition. A number of studies suggest that where parents approve of aggression against age mates it will occur (Davis and Dollard 1940, Lesser 1952);

(4) role learning and identification. Parental aggression in the form of punishment of the child, particularly physical punishment, is associated with high aggression in the child (Sears, Maccoby and Levin 1957);

(5) a permissive attitude towards aggression.

These five factors tend to oppose and contradict each other and it is no surprise that research on aggression is generally inconclusive. Expressed aggression, it would seem, is most obvious in two groups of children experiencing quite different handling - the permissively reared and the punitively reared. Sears, Maccoby and Levin (1957), summarising their research, say "Thus the most peaceful home is one in which the mother

believes aggression is not desirable and under no circumstances is ever to be expressed towards her but who relies on non punitive forms of control. The homes where the children show angry aggressive outbursts frequently are likely to be homes in which the mother has a relatively tolerant (or careless) attitude toward such behaviour or where she administers severe punishment for it or both".

In terms of what we have said about the need for initiative and positive assertion in creative behaviour, the peaceful home, with its love-oriented discipline, might indeed be expected to stultify creativity in a child. But where the child shows evidence of aggression we see that the root causes are totally opposed with high permissiveness for aggression and harsh disciplining behaviour apparently producing the same effect. Many studies have confirmed this (Bandura and Walters 1959, Lynn and Lynn 1961, McCord, McCord and Howard 1961).

Looked at in depth, however, we see that many of the measurements of aggression taken in these studies do not allow us to divide the negative aggression from the positive aggression. Where this has been done (Jackson 1954) the results fit in with the present theory that positive aggression is related to creative output, whereas negative aggression is only destructive.

Jackson (1954) in comparing the projective response of 20 delinquent girls with 20 normal girls (aged 12-18 years) found that there was little difference between the two groups in the overall amount of aggression expressed. This is in line with the main body of research. However, in terms of the outcome of sado-masochistic themes in the girls' stories, we see that 32 out of the 52 stories told by the normal girls had happy endings, whereas only 12 out of the 66 stories of the delinquent girls ended happily. It would thus appear to be the case that frustration and direct tuition and identification with punitive parents (factors known to relate to delinquency) might be the producers of negative aggression whereas permissiveness for aggression, encouragement of the expression of ambivalence, and perhaps the process of operant condition (see cause (2)) would initiate aggression from which emerges a positive and creative end product.

The points raised earlier by Pine and Holt's (1960) study are of relevance here if the view is taken that expression of aggression is expression of "primary process material" (i.e. id dominated). They found that the gross amount of primary process material expressed in their tests was not related to

creativity whereas the gross amount of responses where ego controls had been applied to the primary process material did bear a relationship to creativity. The resolution of aggression in positive ways could be viewed as indicating the presence of ego controls.

From these two studies (Jackson and Pine and Holt) and the concepts introduced by them, it becomes possible to propose that people fall into three groups: (1) those who have a harsh system of defences so that much of their experiences are locked away in the unconscious leaving them with only a narrow band of material available to them on which to base their creative output; (2) those who have access to their feelings but find them either so intensely negative as a result of harsh and punitive experiences that they can't be used positively or who have a normal amount of aggressive feelings but lack the inner controls to channel them, and (3) those people who are open to their feelings, do not find them too intense and use their internal controls (strong ego) to reconcile the opposites in their nature and to use the large body of material available to them in creative output.

These ideas are complex but do in fact make some sense of the inconclusive views about expressed aggression. The latter is investigated in the present research just because it reflects one aspect of the broad dimension of being open or closed to experience. An awareness of aggressive feelings is thought to reflect an absence of a harsh defensive system, and a measurement of the ability to use these aggressive feelings in a positive way would undoubtedly sophisticate the research. Without controls the expression of id dominated material would result in bizarre responses which are not acceptable in ordinary social communication (Pine and Holt). The study of expressed aggression in relation to creativity should be rewarding.

Social Class and Aggression

Secord and Backman state "The overt expression of aggression is directly related to the strength of aggressive needs and inversely related to the strength of internal controls that inhibit aggression. Since lower class parents rely more on physical punishment and express less warmth toward their children, the children may be expected to develop strong aggressive needs and weaker internal controls". Most of the empirical evidence supports this (Mussen and Conger 1956, Sears and Maccoby and Levin 1957, Sewell 1960, Walder 1961). The measure of aggression in most of these studies was overt aggressive behaviour in social situations. Where aggression was measured from fantasy

play with dolls (Sears, Maccoby and Levin 1957) there was found to be no difference between middle class and working class children in the amount expressed; little attention was paid to the outcome of the expressed aggression and as Jackson (1954) indicated, there is substantial difference in underlying mechanism between those individuals who can use aggression positively and those who use it destructively. Where measured aggression takes account of outcome it would seem that the middle class child would be more likely to use aggression positively than would a working class child. The latter would have been likely to experience harsh punishment which would result in overwhelming unresolved anger . There would be few opportunities for positive channelling of this aggression, nor would the child have built up a system of internal controls so that he himself could cope with his negative feelings. With regard to aggression expressed to the parents themselves - a measure to be taken in the present research - it would be expected that there would be a substantial class difference. Sears, Maccoby and Levin found middle class mothers to overlook incidents of aggression towards them more than working class mothers. Further, Bernstein indicates that the middle class child would have been encouraged to query and be curious about facts and statements offered them. Such encouragement would be bound to affect the way children felt about authority figures particularly parents. They would tend to see their parents as less threatening because of their permissive child rearing practices and in addition their curious and querying approach would affect the way they dealt with parental demands. It seems likely in view of these facts that middle class children would be more able than working class children to express direct aggression towards parents. In other situations, too, they would be more likely to query and refute authority.

They would be more used, for reasons enumerated earlier, to the direct expression and acknowledgement of ambivalent feelings in difficult situations and would in fantasied expression of aggression be more likely to produce constructive outcomes.

Sex Differences in Aggression

Aggression is generally reported to be higher among males than females. This is probably part physiological (animal studies have indicated this) and partly due to different child rearing practices and expectancies. Boys are expected to be more aggressive than girls and they are allowed and even encouraged to be so. They are more often physically punished than girls, and Secord and Backman (1964) indicate that the male child develops weaker internal controls as compared with the female child.

We would expect middle class boys to be more at ease also in the constructive use of aggression than middle class girls.

In the working class generally we see strong aggressive needs and weaker internal controls. The aggressive needs of the boys must be stronger than those of the girls. However, boys are less likely than girls to be able to express their needs directly, for the parents impose harsher discipline and have tougher demands. It seems likely that any aggression expressed by working class boys would be of a negative and destructive nature.

4.2.2 Coping and Avoiding

Apart from measuring overtly expressed aggression, another measure of "being in contact with feelings" is found in the concept of coping and avoiding used by Mainord (1956). The latter saw copers as those people who react to emotionally stimulating material by recognising it and relating it to their own needs. The avoiders on the other hand fail to recognise the implications of the emotionally arousing material and avoid it.

Mainord himself investigated this dimension (measured by a Sentence Completion Test) in relation to the remembering of disturbing words. The copers recalled more disturbing words than the avoiders. There was almost no overlap between the two groups in their recall behaviour in spite of the fact that the two groups did not differ in recall on an initial learning task.

That "coping" as an attribute links up with absence of repression and the free flow of perceptions between the layers of consciousness seems evident. For this reason it is investigated here in its relationship to creativity.

Associated with coping as Mainord investigated it, goes recall. Recall of unpleasant emotionally arousing material would seem to be a measure of the individual's ability to be in contact with feelings and in the present research this is a further aspect to be investigated.

In looking at the origins of the ability to be open to experience as reflected in coping and remembering behaviour, we again focus on the rewards and

punishment received in early childhood. Klein (1965) and Bernstein (1960), amongst others, have indicated how parental behaviour which takes into account an understanding of the internal dynamics of a child is essentially a middle class pattern. Middle class parents also label feelings and discriminate between them and are prepared to expect and accept the expression of both negative and positive feelings and regression from their children. This acceptance means that the child is unfearful of the parents and has little need to build up a harsh defensive system, which we know distorts experiences. Further the experience of strong emotions is found by the middle class child neither to be too overpowering or threatening in that they get support and explanations from their parents (Himmelweit 1967).

The working class child, with his poorer language structure, inexperience in labelling and talking about feelings, experience of harsh and discouraging parental attitudes when expressing unacceptable behaviour, attitudes and emotions is likely to be driven to erect a complex and powerful defensive system. Vast areas of experience will remain unacknowledged and useless, shut off in the unconscious. In Rogers' terms he would be out of contact with his inner world and "Closed to experience". His experience of harsh discipline does, as Frenkel-Brunswik indicates, set up intense negative feelings which cause conflict and anxiety because they are unacceptable. A narrowing of experience must accompany the ensuing repression.

For the reasons already outlined in the section on the expression of aggression, we would expect the middle class child to be able to cope with and recall ambivalent and emotionally arousing stimuli better than working class children; it would further be expected that middle class boys would "cope" and "recall" better than middle class girls, and working class girls would "cope" and "recall" better than working class boys.

Hypothesis 3

Children who are "open to experience" *(as measured by expressed aggression, coping with and remembering emotionally arousing material) will be creative.

Hypothesis 4

A child's "openness to experience"* will differ according to his/her social class and sex.

- Middle class children will be more open to experience than working class children.
- Middle class boys will be more open to experience than middle class girls.
- Working class girls will be more open to experience than working class boys.

4.3 Categorising Behaviour

The third characteristic associated with creativity is concerned with the categorising behaviour of the individual. This is defined as "the range of attribute values within which an instance must fall before it can be categorised" (Bruner et al 1956).

A direct relationship between originality and category width has been claimed by James (1890), Maslow (1959), Bruner (1956) and Pribram (1964) who make statements consistent with the view that if disparate things are to be collated, broad categories are necessary.

Whether one looks at categorising behaviour as a cognitive method of functioning or an attitudinal one depends on the theoretical background of the investigator. Gardner (1953) and Klein G.S. (1958) approaching it from the psychoanalytic viewpoint, see this behaviour as an adaptational control mechanism of the ego that mediates between need states and the external environment.

Wallach and Kogan (1966) investigating creativity explore the history and implications of categorising behaviour fully. They surmise that persons willing to entertain the possibility that highly deviant instances deserve category membership, might well turn out to be most capable of conceiving unusual possibilities in connection with creative tasks. They point out that the major difference between conceptual band width (i.e. the estimation of the most deviant examples of a concept) and creative constructs is concerned with who imposes the category limits. For band width tasks, the experimenter specifies the various boundaries and the subject decides which is the most appropriate, whereas in the creativity tasks the subject is offered unlimited freedom as to

the imposition of category boundaries. Seemingly only internal criteria will censor the inappropriate or bizarre.

As Wallach and Kogan point out, although the cognitive operations reflected in conceptual band width and creativity are far from identical, there is sufficient similarity to warrant detailed study of their empirical relationship. Experiments with object sorting tests (Gardner and Schoen 1962) have given results that indicate equivalence range (similar to category width) to be independent of intelligence. Wallach and Kogan (1965) queried whether these measures were also independent of creativity, and found that they were not. Gardner and Schoen (1962) found that subjects telling T.A.T. stories which were quite "distant" from the concrete physical properties of the stimulus tended to form few (but wide) groupings on the object sorting test. (Highly imaginative T.A.T. stories were ranked as most distant) Imaginative creativity did seem to be related to broad categorisation.

Part of Pettigrew's (1958) category width test as used by Wallach and Kogan will be included in the present study to ascertain the relationship of categorisation breadth to verbal and non-verbal creativity. Also since part of the measure of attitude to authority being used in the present investigation is a story told about a C.A.T. (Childrens Apperception Test) card it will be possible to see if there is a relationship between "distance from the stimulus" in the C.A.T. creativity scores and categorisation breadth as Gardner and Schoen's work suggests there should be.

Many of the typically middle class factors already quoted as affecting intelligence, creativity and openness to experience would also seem likely to affect breadth of categorising. With broad categorising indicating a tolerance for deviant instances we would anticipate that factors contributing to this ability would be a permissive and encouraging atmosphere towards experimentation in the home.

One of the most stable of replicated findings in the cognition personality literature is that boys manifest broader band width behaviour than girls (Wallach and Kogan 1966, Wallach and Caron 1959). Wallach and Kogan suggest that the reasons for this are more complex than has previously been assumed. From our arguments in this Review we would presume this to be so with middle class children. A similar argument for the superiority of working class boys scores cannot be made except in so far as physiological reasons (i.e. the male hormones) may make boys more likely to take risks, both physicall and intellectually.

The social class of the children tested by Wallach, Kogan et al is not discussed and it may well be found that middle class children only were used.

Hypothesis 7

Children who are accepting of broad category boundaries will be creative.

Hypothesis 8

A child's acceptance of broad category boundaries will differ according to his/her social class and sex.

- Middle class children will have broader category boundaries than working class children.
- Middle class boys will have broader category boundaries than middle class girls.
- Working class girls will have broader category boundaries than working class boys.

Chapter 5:

CONCLUSIONS

The interest in creativity has stemmed from two major points of view. One is concerned with the betterment of society as a whole i.e. creative talent is needed if scientific, social and industrial advances are to be made. The other point of view is concerned with the betterment of the individual (Rogers et al), i.e. the ability to be creative is a necessary way of fulfilling oneself (self-actualising). Whichever view is stressed the need for more research in the whole area is evident.

A great deal of work has been done in the last 20 years but few conclusions have been reached about the nature and development of creative abilities. A conspicuous gap exists in the literature on the child rearing practices facilitating or restricting creativity in the child.

Whilst studies of creative adults (MacKinnon 1962, Roe A. 1952) give us some useful information, knowledge of the influences in childhood which might be related to creativity is gained only from hazy memories.

It is necessary to study children in order to understand the important environmental factors influencing the development of creative behaviour. The child in his earliest years builds up a store of experience from which his cognitive abilities and personality are formed. Creativity is thought to involve both the individual's cognitive and personality factors and this review of the literature has attempted to show where the early influences affecting these factors might lie.

The main aim of the present study is concerned with investigating the relationship between parental social class (a concept having far reaching implications for the life style and child rearing practices of the individual) and a child's ability to be creative. The social class into which a child is born (it is now firmly established) affects his cognitive development. It is indicated in this review that the sort of family into which a child is born can also be expected to influence the development of aspects of his personality. A child learns by trial and error and reward and punishment what behaviour is acceptable to his parents and we have argued that a creative attitude arises as a result of particular parental behaviour and attitudes. If experimentation and enquiry is not rewarded early on then the child tends to stop trying new modes of behaviour and instead resorts to old established and rewarded patterns of behaviour. The child becomes the conforming and passive adult. It seems likely that a child should be able to tolerate the ambiguity of a problem solving situation, he should be in contact with his feelings both negative and positive and be able to express them and use them in a positive way; and he should not censor the inappropriate or bizarre (i.e. he should have broad categorising behaviour) if he is to be creative. These qualities are likely to depend in part upon the interaction he experiences with his parents.

An attempt has been made in the present research to sample the child's creative ability, intelligence and three major personality attributes thought to be associated with creativity. In addition, an attempt has been made to find out from the children how they see the degree of permissiveness in the home. From the study it is hoped that it will be possible to clarify ideas about the development and nurturing of the creative attitude.

The study was confined to the present state of the children and no attempt was made to go into their early histories. However the nature of the material gained from the children should enable predictions to be made as to the effects, first of social class on the development of the creative talent and finally the effect that more specific child rearing practices will have on creativity.

HYPOTHESES

1(a) Creativity is distinct from intelligence.

(b) Creativity is complex rather than unitary.

2(a) Creativity scores will be greater in middle class than in working class children.

(b) Class and sex will both affect creativity such that middle class boys will be more creative than middle class girls, and working class girls more creative than working class boys.

3. Children who are "open to experience" *(as measured by expressed aggression, coping with and remembering emotionally arousing material) will be creative.

4. A child's "openness to experience"* will differ according to his/her social class and sex.

- Middle class children will be more open to experience than working class children.
- Middle class boys will be more open to experience than middle class girls.
- Working class girls will be more open to experience than working class boys.

5. Children who are tolerant of ambiguity will be creative.

6. A child's tolerance of ambiguity will differ according to his/her social class and sex.

- Middle class children will be more tolerant of ambiguity than working class children.
- Middle class boys will be more tolerant of ambiguity than middle class girls.
- Working class girls will be more tolerant of ambiguity than working class boys.

7. Children who are accepting of broad category boundaries will be creative.

8. A child's acceptance of broad category boundaries will differ according to his/her social class and sex.

- Middle class children will have broader category boundaries than working class children.
- Middle class boys will have broader category boundaries than middle class girls.
- Working class girls will have broader category boundaries than working class boys.

9. Children who see their parents as permissive will be the most creative.

10. The child's view of his parents' disciplinary handling of him will differ according to the sex and class of the child.

- Middle class children will see their parents as more permissive than working class children.
- Middle class boys will see their parents as more permissive than middle class girls.
- Working class girls will see their parents as more permissive than working class boys.

11. Children who see their parents as permissive will be "open to experience", tolerant of ambiguity, and have broad category boundaries.

12. It will be possible to predict children's creativity scores to a significantly greater extent from the total range of test scores and background data than from the intelligence test scores alone.

METHOD

METHOD

Method. Parts I + II

1. Introduction

The general aim of the investigation was to discover whether any relationship exists between parental social class and a child's ability to be creative.

The present research is concerned with investigating the relationship between

(a) creative ability (both verbal and non-verbal) and intelligence;
(b) creativity and personality factors thought to be most crucial to the creative act;
(c) all these measures and social class;
(d) all these measures and the sex of the child.

The investigation is made up of three parts. The first two parts are identical in structure but have been carried out on two different samples of children at different times. The third part of the experiment arises out of a preliminary analysis of the first part of the work and is concerned with investigating further hypotheses about the relationship between creativity, attitude to authority, expression of aggression, being open to experience and class and sex differences in associated child rearing practices.

2. Subjects

2.1 Choosing the Sample

Before the sample was selected, preliminary decisions had to be made with regard to the age of the subjects. It was decided to restrict the investigation to one age group of children, preferably as young as possible, so that the "natural creativity of childhood" (Anderson H. A. 1959) would not have been completely extinguished by environmental influences and peer conformity (Torrance 1963). As group tests were to be used, it was essential to have subjects who could read and write fluently and it was thought that the third year junior group (9 years to 10 years) were the youngest group to meet these requirements. While in fact a few of these children had difficulties in spelling, it was quite easy to understand their meaning when it came to scoring. Any difficulties with reading were overcome by the experimenter reading all the instructions and questions in the tests out loud to the group. It was decided not to use the 4th year junior children because they were undergoing their 4th year tests for placement in secondary schools the following year and their

"examination set" would have transferred itself to the present "game-like investigation" (Wallach and Kogan 1966). In addition to the reasons mentioned, a final reason for choosing the 3rd year was that they were not yet undergoing the "storm and stress" of adolescence which would have particularly affected the responses to the projective tests (Sentence Completion and Children's Apperception Test).

The children tested were all residents of one outer London borough. This is perhaps an atypical area of Britain in that there is a large West Indian immigrant population. However, all children of foreign parentage were omitted from this present piece of research.

The subjects came from two schools which were selected according to their catchment area and position. One of the schools was situated in a middle class suburban area and was fed by the local residents. The other school was situated in a primarily working class area. Both schools had two streams in each age group (these were not ability streams). One stream from each school was tested in Part I of the Research and the other stream in Part II.

2.2 Subjects used in Part I and Part II

83 nine and ten year old children were tested in the first part of the research; approximately half of these were from the school situated in the middle class area and half from the school in the working class area. Approximately half of the initial sample turned out, on investigation, to be immigrants and of foreign parentage and as a major independent variable in the research was to be social class, with particular reference to the variations of child rearing practices within the classes, the foreign children with their different cultures and different class structures were not included in the analysis of data.

A further 80 children were tested exactly one term after the initial testing. These were from the same schools and same years (but different streams) and again half the sample were discarded because of their non-English parentage.

3. Experimental Design

The subjects were tested over two periods of an hour to an hour and a half's duration. These periods were separated by one week. In the first testing session the subjects were given test booklet I which comprised one verbal and one non-verbal creativity test, a Sentence Completion test and a Category Width test (Wallach and Kogan 1966). The Tolerance of Ambiguity test was

contained in a separate booklet and presented last. In the second testing session the subjects were given a word association test, a projective tell-a-story test, a non-verbal creativity test and the Ravens Progressive Matrices. There were time limits for each test.

3.1 Procedure

The subjects were seen three times in all, the two groups being seen in their respective schools and in their own classrooms. The experimenter was first introduced to the children in an informal way when cards were distributed to each child so that the occupation of their father could be written on them. They were told that the experimenter would be seeing them again soon because she needed their help with some games that she was working with. The second and third visits to the school were concerned with the administration of the two test batteries and the experimenter attempted to maintain a game-like atmosphere (Wallach and Kogan 1966) throughout, though the necessity of silence and the importance of following instructions when they were given was stressed. The tests were timed in order that the programme did not interfere with the school time-table and in order that the subjects listened to the experimenter's instructions for each item in the test. The subjects were allowed to finish off earlier incomplete responses if they finished the test booklet early. There was thus no strict adherence to time.

The first battery was introduced in the following way:
"My name is _____ and I have come to see you because I want your help with some games and puzzles which I have here. Some of the puzzles are rather like the ones you see in comics or being played on T.V.. I am interested in the sort of game in which you do best so it isn't much help to me if you've copied Johnnie's paper next door to you because that only tells me what games Johnnie is best at and not what you are best at. I think you'll enjoy doing these puzzles and we have rather a lot to do together, so I want you to listen carefully to what I say and try to do what I say. Now, I'm going to say something which I'm sure your teacher never says: please don't bother about spelling. As long as I can read what you're trying to say, that's all right by me. I'd prefer you not to ask questions as this will disturb the others, but if you really can't understand, then put your hand up.".

In the second testing session the test battery was introduced thus:
"Today I have some more puzzles and games for you to do. Please try to remember the things I told you last time. If you remember I asked you not

to look at your next door neighbour's work because I am interested in what you draw, think about and write. Again there is no need to worry too much about spelling and try to listen carefully to my instructions as we go through the booklet.".

3.2 Estimation of Social Class

In the present investigation we have followed earlier studies (Fraser 1959, Floud 1953, Glass and Hall 1953 etc.) and have used fathers' occupations as the criterion of social class. Whilst clearly it would have been best to go to the parents for this information, the difficulties involved precluded this. Local authorities in general have had some bad experiences with research workers and the local authority visited for this study was no exception. Instead the children were asked their fathers' occupation and all but one child could answer this question. All but three gave job specifications which were easily classifiable since only broad distinctions were desired. (The reliability of this method was tested in a pilot experiment - see Appendix)

The six point classification suggested by the review of the literature was adopted to stratify parental occupation, i.e. retaining classes I and II of the Registrar General's Classification, splitting class III and keeping classes IV and V. The classification used was the following:

A = professional, technical, managerial executive
B = inspectorial, supervisory, and non-manual
C = clerical routine
D = skilled operatives
E = semi-skilled operatives
F = unskilled operatives.

3.3 Tests used in Parts I + II

The tests used in Parts I and II of the research were the following and they were given in the order set out here.

Session I

1. Uses Test - 2 objects (10 minutes - 5 minutes each object)
2. Incomplete Designs (9 minutes - $1\frac{1}{2}$ minutes per picture)
3. Sentence Completion Test (10 minutes - 1 minute each question)
4. Category Width Test (5 minutes - 1 minute each question)
5. Tolerance of Ambiguity Test (10 minutes - 5 minutes each booklet)

Session II

1.	Word Association	(10 minutes)
2.	Circles Test	(6 minutes - 1 minute per circle)
3.	Tell-a-Story Test	(5 minutes)
4.	Ravens Progressive Matrices	(20 minutes approximately).

The intelligence level of the subjects as measured by the N.F.E.R. Primary Verbal Test III was known prior to the testing session.

3.3.1 Intelligence Measures

1) Verbal Intelligence

The present subjects (as part of the local authority's educational policy) had been given a verbal reasoning test five months before the present testing and due to pressure of time and the necessity of keeping the tests as "game-like" as possible, it was thought best to use these results as the measure of verbal intelligence. The actual test given by the head teacher with standardised instructions was the National Foundation for Educational Research Primary Verbal Test III.

2) Non-Verbal Intelligence

The subjects were given the Raven's Progressive Matrices Test (1938) to assess non-verbal intelligence. The test was given in group form as part of the battery of creativity and personality tests. This test was chosen because it has a high g loading, has norms that cover the age groups to be tested, and is also rather game-like in form and would thus fit in to the battery of tests which are all puzzle-like. Routine instructions given on the Manual were read to the subjects. There was no time limit and subjects were asked to draw-a-man as a fill in task when they had finished. I.Q. scores were calculated from the table in the Appendix. (Table A4)

Tests to assess Verbal and Non-Verbal Creativity

3.3.2 Verbal Creativity

Two verbal tests were chosen: these were the Uses Test (Torrance 1962, Hasan and Butcher 1966, P.E. Vernon 1965, et al) and the Word Association Test (Getzels and Jackson 1962).

1) Uses Test

This test, originally devised by Guilford, has been used by many investigators,

is enjoyed by children, and is comparatively easy to score. It was chosen also because it has been found to be one of the most successful tests of all the creativity tests (P.E. Vernon 1967). It seems to stimulate the same set in all types of groups and the task has the same meaning for all subjects. Although Torrance has produced an elaborate scoring manual with tabulation of responses, this was not used here.

Three scores were obtained: fluency (total number of responses), spontaneous flexibility (Guilford 1959) and uniqueness or originality (Wallach and Kogan 1966). The latter score was obtained by classifying the responses and allocating a weighting according to the rarity of the responses in the population tested.

2) Word Association Test

This test has been used by Getzels and Jackson (1962) and Hasan and Butcher (1966) and involves the presentation of a word which has more than one meaning and the subject is asked to think of as many meanings as possible. It seems likely that this test is related to verbal intelligence, but in planning it was hoped that it would be a measure of creativity in that it requires the subject to change his ideas rapidly and shift his frame of reference in an organised structure. It seems to tap Guilford's (1959) factory of "fluency for producing correlates" and involves searching for associates to each stimulus word in order to "give a number of acceptable responses". The test differs from the usual vocabulary test in so far as it discriminates between the subject who gives only one correct response and the subject who gives more than one. The test was scored for fluency, i.e. one point given for each different use.

3.3.3 Non-Verbal Creativity Tests

Two non-verbal creativity tests were used - Circles (Torrance 1966) and Incomplete Figures test (Torrance 1962, Schulman, D. 1966). These involved visual stimulus materials.

1) Circles Test

Here the subject was presented with a circle on a sheet of paper and was asked to make a picture incorporating the circle as the main part of the picture. They were asked to give the picture a title. Six circles were presented in succession on six separate sheets of paper and the subjects were given a minute per circle. (This is different from Torrance who puts all his circles on one page and requests the subjects to complete as many as possible in a given time.

(If the latter procedure had been adopted it seemed likely that several of the circles would be combined into one picture, thus making for difficulties in scoring. Further, the child might spend all the available time in elaborating on one circle only.) The scoring of fluency was irrelevant here as each subject should have completed six circles: thus scoring of originality was the most important score. The measure of originality was obtained in a similar way to the Uses Test where responses were tabulated and given a coding for originality based on the frequency of occurrence of the response for the tested subjects.

2) Incomplete Figures Test

This is similar to the circles test, except that an abstract series of lines was presented to the subject instead of a circle. The designs chosen were taken from Torrance's series because they seemed to be more appealing and imaginative when compared with other series (Schulman 1966) used. The designs were given on separate sheets of paper and the subjects were asked to draw an interesting object or picture by adding lines to the figures. They were asked to give titles and were given $1\frac{1}{2}$ minutes per picture. Scoring was devised to relate to the originality and uniqueless of the drawings.

3.3.4 Test to assess Breadth of Categorising

The test used for measuring the band width type of category breadth was the Wallach and Caron (1959) adaptation for children of the Pettigrew (1958) category width test. Wallach and Kogan (1966) had previously used it and five items only of the possible 12 were selected for the present test. The original (Wallach and Kogan) test was cut down firstly because of the administration time involved and secondly because some of the items concerned topics with which some 9 year olds may have been unfamiliar. The simplest five items were chosen i.e. those most likely to have been experienced by the children (e.g. length of a dog or time eating meals).

Each question involved two responses - guessing the longest and the shortest. The two parts of each item were keyed 1, 2, 3 and 4, representing responses that were least to most discrepant from the central tendency provided for each item. The subject's ten responses were summed to yield the total score. A large score reflects a preference for broad band widths; a small score reflects a preference for narrow band widths.

3.3.5 Tolerance of Ambiguity Test

Frenkel-Brunswik's (1949) work with prejudice in children (see Review of the Literature) was based on her well argued assumption that prejudice was associated with perceptual rigidity, an inability to change set and tendencies to primitive and rigid structuring of ambiguous perceptual fields. These characteristics have been grouped together under the term of "intolerance of ambiguity" and as such has been used widely as a trait which links with the ability or inability to be creative. The person who can tolerate ambiguity is the person who is most likely to be creative; indeed without the ability to tolerate a diverse amount of possibilities, an original and creative solution to a problem cannot possibly be produced (Koestler 1964).

Frenkel-Brunswik (1949) produced a perceptual test to measure tolerance of ambiguity and it has been adapted and revised in the present research. The test involved a series of cards showing one object slowly changing into a second object (e.g. a dog to a car). Each card was a slight variation of the one before it. There were 12 cards in the set and they were presented in a series 1 to 12 and then 12 back to 1. Two sets of cards were presented in this test; the first series was a dog-car series produced by Frenkel-Brunswik and the second series was a modification by the experimenter of an existing series of cards (origin unknown) and showed a wheat-sheaf turning into a tree.

Frenkel-Brunswik found that her prejudiced subjects held on longer to the first object and responded more slowly to the changing stimuli i.e. they showed greater reluctance to give up the original object about which they had felt relatively certain and they tended not to see what did not harmonise with the first set. It was hoped in the present research that the more creative subjects would prove to respond most quickly to the new stimuli.

The present version of the test involved the use of two small booklets, on each page of which was printed one of the series of pictures and the subject was asked to write under the picture what the object was.

3.3.6 Measurement of Attitudes

The present research aimed at tracing the roots of the creative attitude which, it appears from the literature, is an acquired aspect of personality developed through earlier experiences in the home. It is assumed that the creative attitude develops as a result of parental example and parental rewards and punishments meted out for children's behaviour (assessed by the parents

as good or bad). This process could be broadly called the "socialisation" of the child in that the child is trained to fit into the society in which she/he is born.

In the review of the literature there appeared to be a considerable body of opinion (MacKinnon 1962b, Rogers 1959, etc.) to indicate that certain ways of reacting to situations i.e. "being open to experience" and "being in contact with one's feelings" were essential requisites of the creative person. The view has been put forward that it is from these ways of reacting to situations that the creative attitude is built. It is possible to measure attitudes either by direct questions or by presenting subjects with a fairly unstructured situation to which he adds his own interpretation. From this interpretation one gains some insight into the subject's conscious and unconscious attitudes and fantasies. The present research was concerned with gaining knowledge of the subject's attitudes towards and about parental discipline and it was thought that the projective method would produce the sort of material required and in the depth required. Another factor determining this choice of method was that children of 9 years would be unable yet to conceptualise or have insight into their attitudes and would thus not be able to answer questionnaires in a useful way. (This view was changed in Part III in that a Questionnaire was used.)
The particular projective methods chosen here were a sentence completion test and a Tell-a-Story test. The sentences of the former were designed to yield measures of the child's conception of parental discipline as well as the child's own reactions to parental discipline and sibling aggression. The responses can be looked at in two ways - firstly they can be interpreted as direct measure of what the child thinks would happen in the reality situation or secondly, as is more likely, the responses will give a measure of the child's feelings (expressed or unexpressed in real life) with which he is in contact. The Tell-a-Story test followed the method of the Thematic Apperception Test, in that subjects were asked to tell a story about a picture involving an emotionally charged situation.

1) Sentence Completion Test - scored for Aggression:

This test was originally designed to measure children's attitude to authority and there were two premises on which the test was based, the first one being that attitudes towards parental figures experienced as threatening would be mirrored in reactions to diverse authority figures or authority situations throughout life; inability to challenge facts put forward by authorities and

fear of experimenting because of resultant chastisement by authority figures would lead to a non-creative attitude.

The second premise based on psychoanalytic ideas is that all children regardless of how permissively they are reared will have ambivalent feelings to their parents. The ability to accept and acknowledge and express the negative feelings is however only developed in some children as a result of certain child rearing patterns : the resultant lack of defences and "openness to experience" will allow a child to be creative. Melanie Klein takes this even further by putting forward the thesis that all creation as well as other humanitarian traits stem from the act of reparation where the child or adult is almost compelled to do "good things" in order to rid himself of the guilt of having destructive fantasies about his parents. The repressed, defended individual will not even acknowledge that he has negative feelings about his parents and thus is unlikely to be creative as his general experience is limited and he is far from "open to experience". It should be borne in mind that expression of aggression by the child does not mean that the child has necessarily experienced aggression from his parents. (Sears, Maccoby and Levin 1957). Indeed children of permissive parents have been found to be as aggressive as those children punitively reared. The relationship between child rearing patterns and expression of aggression is complex as has been indicated in the Review of Literature and detailed discussion of this relationship will be considered later.

The sentences were aimed at getting the child's attitude to parental command (2 sentences), the child's view of the parents' reactions on receiving the child's bad report and on the child's request to go out to play, and the child's reaction to sibling aggression. From the theoretical literature and views held in this paper it was presumed that the creative child would be the child who could

(a) negate or query parental command;
(b) assess their parents' reactions to a bad report as permissive;
(c) assess their parents' reactions to a request to play as agreeable;
(d) be agressive to the sibling rivalry position.

Scoring (Detailed information in Appendix Table A11)
Responses to parental commands (statements 1 and 5) were scored according to the subject's refuting or accepting parental authority. Responses to statements 2 and 3 gave a measure of permissiveness in the home as seen by the child.

Responses to statement 4 about sibling aggression gave a measure of the child's ability to express aggression in a situation where aggression is almost to be expected.

Sentence Completion Test - scored for "Coping" and "Avoiding":

The sentences were also scored in terms of "coping" and "avoiding" behaviour. Mainord (1956) introduced the term "copers" and "avoiders" in terms of a subject's response to a highly emotionally charged form of a sentence competition test. Persons who were sensitized to the sexual and aggressive implications of the various sentence stems and could relate them to their own needs and emotions were termed "copers"; those who failed to recognise the implication of the sentences were the "avoiders". The parallels for the present research are evident and in fact the words used by Mainord are almost identical to the concept of "being in contact with one's feelings" and of being "open to experience" used in this paper to indicate the personality correlates or attitudes necessary for creativity. The scoring criteria, though producing somewhat similar scores to the previous methods, were different. The criteria were the following:

(1) the more specific the response, the higher the score;
(2) the stronger the expressed feeling, the higher the score;
(3) the more arbitrary the response, the lower the score.

The example given by Mainord was the following:

The worst thing a girl can do is:
Score 2 - sell herself, think about a male's sex;
Score 1 - lie, slap a boy;
Score 0 - go to a beauty parlour; not be ladylike.

The criteria are somewhat vague and difficult to interpret in practice. Discussion with other psychologists on particular responses to the sentence completion test revealed quite clearly that what one person would classify as a coping response, the other person would not, even though both had the criteria before them. Scoring was thus carried out by the experimenter only and attempts were made to make the criteria more specific. The responses were scored on a 3 point scale with the highest score 3 being allotted for a good "coping" response and the lowest score 1 being given for an "avoiding" response. (See Table A10)

2) Tell-a-Story Test

This test was designed to assess the subject's interpretation of a conflict situation between adult and child as portrayed in part of a card from the Childrens' Apperception Test. The original card involved a child monkey being spoken to by a female monkey and in the background there were two monkeys drinking tea and talking together. In the present picture the adult monkey and child monkey only were retained and traces of femininity had been erased from the adult figure so that the child has more freedom for projection.

The stories produced by the subjects were scored for three factors - uniqueness (originality), amount of aggression expressed and "distance from the stimulus". The latter concept was used by Wallach and Kogan (1966) following Gardner and Schoen's (1962) idea that the subjects presenting T.A.T. stories that were distant from the concrete physical properties of the stimulus tended to form few but wide groupings on the object sorting test. Highly imaginative stories were ranked as most distant, thus showing up the clear link between imagination and originality. Reliability of scoring was ensured by getting two people to sort and score the stories. The stories were further sorted according to the outcome of the aggression expressed in the stories. This follows Jackson's (1954) finding that the endings of the stories told by her delinquent groups of subjects were in direct contrast to the group of normal subjects. Whereas the aggressive stories of the normal girls invariably ended happily, the aggressive stories of the delinquent group ended unhappily. The stories in the present research were sorted into four groups : those where the aggressive theme was resolved happily, those where the child refuted parental authority, those where the parents sent the child to bed or told him off, and those where there was no aggression expressed in the story.

Method. Part III

1. Introduction

The hypotheses for which the tests in this part of the research were designed, arose out of the initial simple analysis of test scores obtained from the first sample of children tested. (PartI &II) It appeared from these results that those children gaining the highest scores on creativity tests were also prepared to express their ambivalence towards their parents to a greater degree than the uncreative children. As indicated in the Review of the Literature, it would seem that such expression of feelings is linked up with the degree of

permissiveness in the home where the more permissive parents would encourage expression of feelings and would tolerate the expression of negative feelings.

Subjects to be tested in Part III of the investigations were selected as being children who had gained either very high or very low creativity scores (both verbal and non-verbal). It was the aim here to compare the differences of attitude and differences in parental child rearing practices experienced by the high and low creative children. The selection procedure partially fell down, however (see 2.1 below).

The decision was made to investigate the children's attitudes, rather than to approach the parents, for two reasons. It was felt that it would not be possible to get accurate information on parental child rearing practices direct from the parents and that parents would find it difficult to give information if it was thought to be either socially unacceptable or unacceptable to the interviewer. Further, parental information, while it may be factually correct, does not portray the emotional overtones which accompany child rearing (e.g. the mother who says she never punishes her child, but who will maintain a chilly silence to the child for days after the disobedient act). Observation alone could reveal these nuances of a parent-child relationship and the difficulties in setting up such observations put it outside the scope of the present research. For these reasons, the children themselves were tested. It was hoped that the measures used would give enough information about the way the child viewed his parents, their disciplinary pattern and degree of permissiveness in the home. From these findings it would seem possible to be able to reject or accept the hypotheses put forward earlier.

2. Subjects

2.1 Choosing the Sample:

The subjects in this part of the research were selected from the original 79 subjects in the following way. Lists of scores arranged in rank order were prepared for verbal and non-verbal creativity. The sexes were kept separate. Then the top 10 and the bottom 10 subjects from each list were the selected subjects to be used in Part III of the research. The aim, as has already been mentioned, was to compare the differences of attitude and differences in child rearing practices experienced by the low and high creative children. It was not possible to adhere exactly to the prepared list as some of the subjects had transferred schools or were ill or indeed appeared twice on the lists (i.e. having both high verbal creativity and high non-verbal creativity scores). It was therefore necessary to substitute other subjects (see Appendix, Table A25) to make up the number.

2.2 Subjects

The subjects were selected from those subjects used in Parts I + II of the research (see selection of sample). They were 4th year primary school children aged 10 - 11 years and were tested either 2 or 3 terms after the administration of Parts I and II.

3. Experimental Design

The subjects were tested in one period of an hour and were given the Test Booklet 3 which was made up of the following measures:

(1) Remembering test (refractive technique (Frank L. 1948) to assess the child's ability to remember or distort emotionally arousing material presented in a story);
Approx. 10 minutes

(2) Child's assessment of permissiveness in his home (a child's assessment of his own treatment by his parents when he was in a given difficult situation).
Approx: 4 minutes

(3) Multiple choice questionnaire (as assessed by the child) of his/her reactions to emotionally arousing confrontations with authority from which a measure of the child's ability to be "in contact with his feelings" was obtained.
Approx: 4 minutes

(4) Recall of when the subject was last praised or blamed and for what.
Approx. 5 minutes.

(5) A further measure of creativity designed by the experimenter involving verbal and non-verbal abilities (sticky shapes Picture test).
Aprox. 20 minutes

3.1 Procedure

The subjects were seen only once. They came from the two classes in each of the two schools and were [illegible] grouped together for testing. The experimenter introduced the tests by saying:

"I expect you remember that I came to see you last year to ask for your help with some games and puzzles which I had with me. I have come again today to ask you to help me by doing some more of these puzzles. Again there is no right or wrong answer to each question so please don't worry what your next door neighbour is writing. I am only interested in what you, yourselves, can do. Could you listen carefully to what I am going to ask you to do.".

3.2 Tests used in Part III

The tests used in Part III of the research were the following and were given in the order set out here:

1.	Subjects' assessment of their own parents' permissiveness.	(4 minutes)
2.	Recall of story.	(10 minutes)
3.	Questionnaire.	(4 minutes - 1 minute per question)
4.	Recall of Praise and Blame.	(5 minutes)
5.	Sticky Shapes Creativity Test.	(20 minutes)

1) Measure of the permissiveness in the home

After the story had been read to the subjects they were asked how they would have been treated by their parents if they had been in similar predicaments to the two boys in the story. This is a factual measure of how the child sees the parents and it is open to distortion in that the child may rather be reporting on

(a) how he would like to see his parents rather than on how they actually were;

(b) how he thinks the experimenter would like to see the ideal parents behave.

A lot of stress was laid throughout testing on their answering "really as they would behave" rather than as they ought to behave; "there was no right or wrong." It was hoped therefore that the two distortions mentioned were minimal.

2) Remembering test using the "refractive technique"

This test was designed to measure recall of emotionally arousing material presented in a story and read aloud to the subjects. The story told of two boys who fell into a pond and got soaked. On getting back to their respective homes one of them is treated permissively and mildly admonished whilst the other boy is hit, told off and sent to bed. The subjects were asked to retell the story in their own words and the stories were scored according to how much of the emotionally arousing material (i.e. the scolding) was remembered and, as a comparison, how much of the permissive parents' handling was remembered. The theoretical concept underlying this test is that those children who were "avoiders" (see Mainord's concept, sec. 3.3.6) and were not "in contact with their feelings" would tend to remember less of the tension arousing aggressive material presented in the story. Those who remembered this material were

likely to be the most creative children, according to the present hypothesis.

The various parts of the story of interest were coded and subjects were given marks for each part recalled (see Appendix). Two total scores were obtained - one for the number of parts of the story recalled which were associated with the punitive parents and one for the number of parts recalled which were associated with the permissive parents.

The subjects were allowed ten minutes to complete the story. A few of the children failed to complete it and were given a score of nil. Failure to complete the story can be looked at in two ways: either the child was a slow worker or the child did not wish to recall the parts of the story which were emotionally arousing and therefore concentrated on the earlier part of the story as a means of "avoiding" the important material.

3) Multiple choice questionnaire

A questionnaire was designed by the experimenter to assess the extent to which the subjects were aware of their feelings when presented with certain difficult situations. Those defensive children who had not been allowed to express negative feelings at home and were always expected to be "good" obedient children would be least likely to acknowledge the negative responses offered in the multiple choice questionnaire and would opt for the conforming response. These children, it is hypothesised here, will be least "in contact with their feelings" and least able to face up to being aggressive and taking an independent action. They are likely to be the least creative of the children.

The situations depicted in the questionnaire were the following:

(1) the child is punished for something he didn't do;

(2) the child's parents are away for a holiday and the child is left with a strict aunt;

(3) the child has found that a sibling has been given a present by grandmother but the subject hasn't;

(4) the child's parents ask him to visit a boy he doesn't like who is in hospital.

The subjects had a choice of three reactions to these situations, either

(i) to do the "good" and "right" thing without feeling negative at all;

(ii) to acknowledge the negative feelings but not to express them, or

(iii) to acknowledge and express the negative feelings.

Scores were allotted according to the ability to acknowledge and express negative feelings.

4) Recall of praise and blame

This particular test item was included so that more details of the interaction of the parents with the child would be obtained. Here the subject was asked when and why he was last praised and when and why he was last blamed. The Critical Incident Technique (Flanagan 1949, 1952) was used here. The subjects were asked to recall a particular incident and that the most recent. Flanagan devised this technique to make this sort of subjective recall more valid. In order to help the children to respond to this request for recall, the children were asked to not only remember the date but also the time of the day that they were praised or blamed, thus making it more difficult for them to make up an incident. It was planned to use a content analysis for developing a scoring system for the set of responses.

5) Sticky Shapes Creativity Test

This test was designed by the experimenter as a means of looking at a creative task which combined both verbal and non-verbal aspects of creativity. The subjects were given a selection of sticky shapes and asked to use them to make pictures. The title of the picture was given to them -"Mouse in Danger". They were encouraged to annotate their pictures and to explain what was happening in the picture and they were allowed to add details to the picture with their pencils. There was no time limit to this test. (Approx. 20 minutes)

It proved very difficult to separate the verbal and non-verbal aspects of the pictures produced in this test. In making sense of the picture the scorers were very reliant on the annotations. This was because very few of the subjects were very skilled at drawing and relied on squiggles and a few lines to depict ideas which were then labelled. As skill in drawing is not the object of this exercise this was perfectly acceptable, but it did mean that separation of the verbal and non-verbal aspects of the task became impossible. Two scores were obtained in this test. The first score was concerned with the originality of the picture. It became evident that certain conventional themes were used a great deal by the subjects to depict "a mouse in danger" i.e. a mouse being chased by a cat or a mouse in the vicinity of a mouse trap. The pictures were scored according to the number of themes used in the picture with an additional score of one mark being given if there was particularly good elaboration of the theme

or creative annotation. The second score obtained for the pictures was that of the number of sticky shapes used in the picture. This is a very primitive way of measuring the complexity of the picture. It is clear that efficient and creative use of only a few pieces of paper might produce a better, more original picture than the indiscriminate use of all of the pieces.

STATISTICAL ANALYSIS OF RESULTS

STATISTICAL ANALYSIS OF RESULTS

The statistical procedures used for the results obtained in the research were the following:

(Boys and girls have been treated separately throughout the statistical analysis unless stated otherwise.)

1. Correlation Matrices

1.1 Product Moment Correlation Matrices were calculated for the variables obtained from the creativity, intelligence and personality measures. There were 25 variables in Parts I and II of the research and 13 more variables in Part III. The programme used was the Health Sciences Computing Facility (University of California - Division of Research Resource Facility of the National Institute of Health) Programme Reference - BMDO 3D Correlation with Item Deletion. Version Nov. 13th 1964.
See Table 2 (P. 120) for variables used.

1.2 The correlation matrices for the total sample of boys and girls taken separately are given in Tables 4 and 5 (Parts I and II) and Tables 6 and 7 (Parts I, II and III) (Those correlations which were significant are indicated:
- * = r = .05 ** r = .01 *** r = .001

1.3 Means and standard deviations were obtained for the total samples of boys and girls taken separately. These are given in Table 3.

2. Analyses of Variance

2.1 A series of 2 x 2 Analyses of Variance were carried out using as the main variables social class and sex (the social class groups were A, B, C and D, E, F.)
The sample sizes set down in Table 1 (i) apply to all those tests carried out in Parts I and II of the research, and those set down in Table 1 (ii) apply to all those tests carried out in Part III.
See Tables 9, 20, 28 ; full details in Appendix (Tables A9, 20, 28)

It was necessary to collapse many of the original scoring categories for the analyses because of the small number of subjects represented in these categories (for details, see Appendix).

2.2 A series of three-way analyses of variance of the creativity scores were carried out to assess the degree of relationship between the scores when sex, class and personality measures (or parental permissiveness) were the independent variables (see Tables 13-19, 22, 26-2 Full details in Appendix Tables Ai3 - 19, 22, 26, 27

2.3 The stories were sorted into four groups according to the outcome of the aggression expressed in the stories (Story Test). The creativity scores of the children in the four groups were subjected to a one way analysis of variance. (See Table 17)

3. Multiple Regression.

3.1 Multiple regression analyses were carried out for boys and girls separately - using the variables for which correlation matrices were prepared (see Table 2). The purpose of carrying out these analyses was to see which of the measurements taken in the present research gave the best predictions of each of the creativity variables. The computer programme used was the University of California Division of Research - Resource Facility of the National Institute of Health - BMDO 2R.

3.2 Regression coefficients were obtained for those variables which when added made a significant addition to the multiple correlation.

3.3 The level of F at which significance was required was the 0.05 level of probability.

3.4 Regression equations were prepared for both Parts I and II of the research (Boys n = 35, Girls n = 44) and for Parts I, II and III (Boys n = 22, Girls n = 27). It will be seen that the variables appearing in these two equations were identical in every case and except where new variables from Part III were included in the equation, the first equations were used for discussion (because there were more subjects used).

DISCUSSION OF RESULTS

Chapter 1. The nature of creativity. The relationship between creativity and (a) intelligence, (b) sex and (c) class.

Chapter 2. Creativity and the ability to be "open to experience".

Chapter 3. Creativity and tolerance of ambiguity and band width.

Chapter 4. Creativity and a child's view of his parents' disciplinary behaviour.

Chapter 5. The prediction of creativity scores.

Chapter 6. Conclusions.

Tables and Figures follow the discussion of the hypotheses in each chapter.

DISCUSSION OF RESULTS

The discussion will take the form of an examination of each hypothesis in terms of the results obtained from the statistical analysis of the data.

The main body of the discussion will be concerned with the data obtained from Parts I and II of the research where there were 79 subjects (44 girls, 35 boys). Where the data obtained from Part III of the research is relevant, then this is indicated. There were 49 subjects in Part III (27 boys, 22 girls).

The minimum level of significance in all cases was taken to be the 0.05 level of probability.

Chapter 1. The nature of creativity. The relationship between creativity and (a) intelligence, (b) sex and (c) social class.

The hypotheses to be discussed are:

Hypothesis 1:

(a) Creativity is distinct from intelligence.

(b) Creativity is complex rather than unitary.

Hypothesis 2:

(a) Creativity scores will be greater in middle class than in working class children.

(b) Class and sex will both affect creativity such that middle class boys will be more creative than middle class girls, and working class girls more creative than working class boys.

1. Creativity and Intelligence.

Hypothesis 1(a) demands that verbal intelligence and non-verbal intelligence should intercorrelate considerably more highly with each other than

i) verbal intelligence with the verbal and non-verbal creativity measures or than

ii) non-verbal intelligence with the verbal and non-verbal creativity measures.

From Tables 8 (i) and (ii) it can be seen that these conditions were nearly always fulfilled for both boys and girls, though the results did not present an entirely straight-forward picture.

For boys, the conditions were met by the correlationsbetween the intelligence

measures and Uses (verbal creativity), Circles (non-verbal creativity I), Tell a Story and Picture Test (Part III). The two intelligence measures did however correlate significantly with Incomplete Designs (non-verbal creativity II) though the correlations were somewhat lower than the correlation between the two intelligence tests and than that between Incomplete Designs and Uses.

(These findings were substantiated by the multiple regression analyses where verbal intelligence appeared alone as a predictor of creativity in the case of the Incomplete Designs Test only See page206

For girls, the conditions were met by the correlations between the intelligence measures and all the creativity tests. The Uses Test correlated significantly with verbal intelligence but to a lesser extent than the intelligence measures did with each other. (The multiple regression analyses indicated that verbal intelligence was a predictor of the Uses Test and of the Tell a Story Test. See Page 207)

These findings suggest that Hypothesis 1(a) is upheld and that intelligence and creativity are distinct.

Hypothesis 1(b) relates to the probable complexity of creativity measures. We have argued in the review that just because the majority of creativity tests do not correlate significantly with general intelligence, it cannot necessarily be presumed that they measure a single separate factor of creativity (Vernon 1965). However, there are several factorial studies (Ward 1967, Cropley 1966) which indicate that the analyses of creativity tests (similar to those used in the present study) do clearly yield a creativity factor. This factor was, according to Ward, distinct from school attainments, whereas Cropley found that there was a correlation between the creativity factor and intelligence.

Factor analyses were not carried out in the present study owing to the small number of subjects (35 and 44) and the low number of significant correlations in each Table (4 out of 21 and 5 out of 21). However it was clear from the results that no unitary factor of creativity was present.

From Table 8i(boys) it can be seen that a significant correlation between measures of creativity existed only in one case - that of the Uses test (verbal creativity) with Incomplete Designs (non-verbal creativity II). The other 9 correlations were below the 5% level of significance.

From Table 8 (girls) it is clear that only three correlations, between creativity tests, reached the 5% level of significance - the Uses test (verbal creativity) with Incomplete Designs (non-verbal creativity II) and negatively with the creative Picture score, and the creative Story score with the creative Picture score. The other 7 correlations were below this level of significance.

If the creativity intercorrelations are rank-ordered it is clear that the Uses test (verbal creativity) is the dominant one for boys (ranks 1, 2, 3, 5) but is less dominant for girls (ranks 2, 3, 5, 10). However, for boys and girls the two non-verbal creativity measures (Circles and Incomplete Designs) have low correlations with each other and with the creative Story score and creative Picture score. Such figures could not be accounted for by a single creativity factor; a number of specific creativity factors would also be needed. Figure 1 illustrates the probable structures underlying the two correlation tables. (Page 134)

Hypothesis 1(b) was thus upheld. Creativity was complex. There was however a difference in the structure for boys and for girls. For boys the creativity component of the Uses test appeared to be manifest in the creativity levels of the other tests - which were otherwise independent of each other. For girls, the freer creativity tests (Tell a Story and Picture tests) correlated and appeared comparatively independent of the verbal creativity component.

2. Creativity and the Effects of Social Class and Sex.

Hypothesis 2 demands that the scores gained on the 5 creativity measures will vary according to the social class of the child and according to the sex of the child. The arguments put forward in the Review of the Literature suggested that middle class children would be more creative than working class children and that middle class boys would be more creative than middle class girls, and that working class girls would be more creative than working class boys.

The two-way Analyses of Variance (Table 9) indicates the way sex and class factors affected the intelligence and creativity measures. In contrast to the creativity findings there were significant social class factors operating

for both intelligence measures. Middle class children of both sexes gained higher scores on the intelligence tests than their working class peers. This finding was expected since much previous work has shown that middle class children do better at intelligence tests than working class children.

With regard to the effects of social class and sex on the creativity measures, only one significant result emerged - for verbal creativity. Those children who were most likely to gain high verbal creativity scores were boys. As the Uses test (used to assess verbal creativity) is one of the most popular measures of creativity, this finding that boys gained higher scores than girls is of interest.

In the Incomplete Designs test, a fairly high but not significant result arising from the analysis of variance indicated that boys tended to be more creative than girls on this test too. (See Tables 9 &A 9.)

Thus Hypothesis 2(a) stating that creativity varies according to the social class of the child must be rejected.

Hypothesis 2(b) must also be rejected. Middle class boys were not more creative than middle class girls nor were working class girls more creative than working class boys.

However, a finding which was not hypothesised is of interest - boys as a whole were more verbally creative than girls (and showed a tendency to be more creative also on one of the non-verbal tests - Incomplete Designs).

3. General Discussion:

From many studies investigating the relationship between creativity and intelligence, it seems possible to say with some confidence that the relationship between the two abilities is non-linear and is greater for subjects with I.Q.s below 120 than for those above that point. Actual correlations between creativity and intelligence measures have varied from experimenter to experimenter and according to the creativity tests used. Wallach and Kogan (1965) further demonstrated the effects of motivation on creativity and its relationship to intelligence. Their results, from tests carried out in a "game-like setting", indicated that intelligence was distinct from creativity when measured under these conditions and in addition the creativity tests showed much generality amongst themselves.

Despite the fact that the present research was carried out in a "game-like

setting" and in a permissive atmosphere, the results obtained were by no means as clear cut as Wallach's and Kogan's. However, in the present study the children were of average rather than superior intelligence and this may well be a sufficient explanation of the less clear-cut separation of "intelligence" and "creativity".

With regard to the relationship existing between the creativity measures and intelligence, an interesting sex difference in pattern emerged. A significant correlation occurred for girls between scores on the Uses test and intelligence; in addition, verbal intelligence was a predictor of the Story test in the multiple regression analyses.

For boys, there was a significant correlation between Incomplete Designs and both types of intelligence.

The correlation between all the other creativity measures and intelligence was fairly small, indicating that creativity can be considered as separate from intelligence - even if not as completely distinct as Wallach and Kogan suggested.

Whether the particular creativity tests used here actually measured creative thought remains open to question and in retrospect it would have been very useful to have had an assessment of the subject's creativity other than from the test results (i.e. teachers' ratings). Vernon's recent (1967) work with creativity tests and other ratings of creativity led him to say that the Uses test was one of the most useful of the creativity tests, whereas he saw the Circles and Incomplete Patterns (a test similar to Incomplete Designs) as poor indicators of creativity. The present research would substantiate that they are <u>different</u> measures of creativity - but of course without some outside criterion it is not possible to comment on their validity.

Of particular interest were the differences in the pattern of relationships between the creativity measures for the two sexes. There was a wide variation in the size of the correlations existing between the creativity measures. Taking the Uses test as a comparing point, it can be seen that,

for boys, all the other creativity scores correlated with it to quite a high degree, although the only significant finding was that between the Uses and Incomplete Designs (r = .52 or .48 if intelligence was partialled out). For girls, however, there appeared to be a split between the freer tasks and the more conventional ones. The freer tests (Make a Picture and Tell a Story) correlated significantly (r = .43) and there was a significant correlation between the Uses test and Incomplete Designs test. There was, however, a significant negative relationship between verbal creativity and the Picture test (r = -.34) indicating broadly that those girls who did well on the more structured creativity tests tended not to do well on the freer tasks. The freer a test becomes, the more difficult it is to standardise scoring procedures. However, two scorers agreed closely on the scoring of the free creativity tasks (Picture and Story), and the sex difference does not seem likely to be due to unreliable scoring.

A third finding indicating sex differences was in the level of creativity scores. In all three of the structured creativity tasks boys gained superior scores to girls (significantly so in the case of the Uses test; approaching the 5% level of significance in the case of Incomplete Designs). In the freer tests the scores of the two sexes were similar.

The results obtained in the present research indicating sex differences can partly be explained in the light of some suggestions put forward by Kogan and Morgan (1967). They believed that defensiveness was a distinct inhibitor of creativity in the case of boys but not girls. Defensive girls would speed up the flow of associations under conditions of threat or evaluative pressure ...."For girls this should entail an enhanced need to conform to the experimental requirements, to please the experimenter and the school authorities. An abundant output of associates would thus serve the needs of the defensive girls well. Since a girl's characteristic behaviour patterns rest heavily on the use of verbal skills, the kind of performance required in the experimental task (i.e. Uses test) is well within the scope of the behavioural repertoire. For defensive boys, in contrast, socially approved behaviour is much less likely to take conforming or compliant forms nor should we expect the defensive pattern to be channelled in the direction of enhanced verbal output. Favoured methods of responding in boys, motor action or resistance to the demands of an authority, do not help and probably

hinder in an associative task.

Conceivably the high defensive boy devotes so much energy to the task of defining for himself an appropriate mode of responding in an incongruent situation that the associative flow essential to the creative performance is substantially impeded."

Kogan and Morgan pointed out that the quality of the girls' responses in their research reflected their defensive origin. The responses were distinguished by their obsessive, profuse and undiscriminating nature; they were not of high cognitive quality. A few unique responses did occur, and seemed to arise as a result of category exhaustion rather than in immediate originality.

A small pilot experiment carried out on the responses to the Uses test of 20 of the subjects in the present research revealed that the results did in fact partially substantiate Kogan and Morgan's suggestions. The responses of 10 boys and 10 girls to the two items of the Uses test were divided up into those responses falling under category exhaustion (i.e. more than one response occurred for each category of response) and those responses existing in isolation. (See Table A16 Appendix.)

The results were the following:

Item 1	Boys produced	25	responses (Cat. Exh.) and	42	solitary responses
	Girls	28	"	20	"
Item 2	Boys	31	"	29	"
	Girls	35	"	14	"

It will be seen that as predicted, girls used the procedure of category exhaustion to a greater extent than boys. However, the larger number of solitary responses produced by the boys and the larger total number of responses has not been accounted for in the explanation put forward by Kogan and Morgan. Clearly further investigations are necessary to account for the other differences.

Finally, a comment is needed on the lack of relationship between social class and the creativity scores. The Review of the Literature showed that child rearing practices are considered to vary according to the social class of the parent and the sex of the child being reared; it was argued that certain child rearing practices would be most likely to produce certain personality correlates of creativity and thus creativity itself.

There are three possibilities to account for the negative results:

(1) That the sample was atypical.

(2) That there was not enough difference in the environments of the middle and working class children being tested.

(3) That in fact social class did not effect creativity at all.

The first possibility can probably be excluded in that the intelligence test results were (in line with much previous research) related to social class, i.e. middle class children gained the highest intelligence test scores. The second possibility is more plausible. The sample was basically divided into white collar and blue collar groups - but it is doubted whether the groups on the dividing line were so distinct that parental expectancies and child rearing practices would be greatly different. The numbers were too small to take more selected and extreme groups - say, A and F, which could theoretically have given a greater contrast. The third possibility remains open. "Class" may be too crude to reflect subtle family differences in child rearing practices. Moreover, other variables such as permissive or restrictive early schooling may counteract the effects of parental handling and prevent class effects appearing.

TABLE 1 SUBJECT NUMBERS FOR SEX AND SOCIAL CLASS GROUPINGS

(i) Parts I and II

Sex	Social Class ABC	Social Class DEF
Boys	22	13
Girls	10	34

(ii) Part III

Sex	Social Class ABC	Social Class DEF
Boys	16	11
Girls	4	18

TABLE 2 VARIABLES used in CORRELATION MATRICES (Parts I, II and Parts I, II and III)

Parts I, II - Matrices A Variables 1 - 25. *CM = Correlation Matrice
Parts I, II, III - Matrices B Variables 1 - 38. **MR = Multiple Regression

Variable No. in CM*	Variables		Variable No. in M.R.**
1	Verbal I.Q.		1
2	Non-Verbal I.Q.		2
3	Verbal Creativity (Uses)		
4	Non-Verbal Creativity I (Circles)		
5	Non-Verbal Creativity II (Incomplete Designs)		
6	Word Meaning		3
7	Band Width		4
8	Tolerance of Ambiguity		5
9	Sentence 1	Sentence Completion test scored for Coping	6
10	Sentence 5		7
11	Sentences 1 and 5		8
12	Sentence 2		
13	Sentence 3		9
14	Sentence 4		10
15	Sentences 3 and 4		
16	Aggression expressed	Tell a Story test	11
17	Creativity		
18	Distance from Stimulus		12
19	Sex		
20	Social Class		13
21	Sentence 1	Sentence Completion test scored for Aggression	14
22	Sentence 5		15
23	Sentence 2		16
24	Sentence 3		17
25	Sentence 4		18
26	Number of Sticky Pieces used	Make a Picture	19
27	Creativity of Picture - Experimenter's estimate		
28	Creativity of Picture - Scorer's estimate		
29	Parental Punishment (assessed by the child)		20
30	Q.1	Questionnaire	21
31	Q.2		22
32	Q.3		23
33	Q.4		24
34	Recall I	Recall	25
35	Recall II		26
36	Recall III		27
37	Behaviour eliciting Praise		28
38	Behaviour eliciting Blame		29

KEY to Sentences:

Sentence 1 "Father says I must do my homework and I say ....."
Sentence 2 "I want to go out to play and mother says....."
Sentence 3 "If I got a bad report from school....."
Sentence 4 "My sister and I had a quarrel....."
Sentence 5 "My father says I must go to bed and I say....."

TABLE 3 MEAN and STANDARD DEVIATIONS FOR VARIABLES used in CORRELATION MATRICES A & B.

	Correlation Matrices A (Parts I and II)				Correlation Matrices B (Parts I, II and III)			
	Boys n = 35		Girls n = 44		Boys = 27		Girls = 22	
Variable	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
1	103.09	11.69	105.02	9.45	101.41	12.08	107.77	10.67
2	108.51	10.43	104.52	10.76	107.74	11.42	105.09	13.41
3	10.49	8.35	6.11	4.63	11.59	8.41	6.96	5.56
4	3.60	2.38	3.57	2.31	3.89	2.56	4.00	2.47
5	5.11	2.32	4.14	1.73	5.44	2.34	4.27	1.86
6	10.94	2.81	9.59	2.68	10.85	2.77	9.86	3.29
7	28.46	5.48	26.34	6.31	28.81	5.68	26.91	5.55
8	5.26	1.79	5.11	1.40	5.19	1.90	5.50	1.57
9	2.23	.81	2.16	.81	2.30	.82	2.36	.79
10	2.23	.73	2.32	.60	2.30	.67	2.27	.63
11	4.46	1.27	4.48	1.11	4.59	1.15	4.64	1.14
12	2.34	.80	2.27	.73	2.22	.85	2.14	.77
13	2.26	.82	3.39	.72	2.26	.86	2.41	.73
14	2.06	.76	2.02	.66	2.04	.81	1.96	.58
15	4.31	1.21	4.41	1.09	4.30	1.27	4.36	1.09
16	3.60	1.42	3.43	.97	3.52	1.45	3.46	.80
17	3.17	1.32	3.02	1.13	3.19	1.27	2.86	1.21
18	3.94	1.39	3.70	1.50	3.89	1.42	3.36	1.47
19	1.00	.0	2.00	.00	1.00	0.00	2.00	0.00
20	1.37	.49	1.77	.42	1.41	.50	1.82	.40
21	2.20	.83	2.20	.88	2.19	.88	2.36	.85
22	2.31	.72	2.43	.70	2.33	.68	2.55	.74
23	2.14	.73	1.93	.70	2.04	.76	1.77	.61
24	2.03	.71	2.11	.75	2.07	.68	2.05	.72
25	2.51	1.25	2.40	1.17	2.41	1.34	2.32	1.09
26					33.63	14.37	36.27	14.92
27					1.81	.83	1.96	.58
28					1.74	.76	1.68	.65
29					1.82	1.08	2.31	1.21
30					2.70	.61	2.86	.35
31					1.96	.71	2.05	.49
32					2.00	.48	2.27	.55
33					1.89	.80	1.55	.86
34					1.41	.93	1.64	.73
35					.85	.91	1.14	.71
36					.67	.48	.73	.46
37					1.52	.64	1.59	.59
38					1.67	1.11	1.77	.81

TABLE 4 PRODUCT MOMENT CORRELATION MATRIX - Boys (n = 35)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	1.0	.483**	.220	.179	.461**	.542**	.277	.155	-.155	-.302	-.272	-.144	-.049
2			.064	-.085	.368*	.306	-.008	.117	.017	-.317	-.172	-.205	-.189
3				.231	.522**	.388*	.499**	-.180	.253	.001	.162	-.161	-.092
4					.269	.111	.308	.170	.141	.122	.160	-.188	-.233
5						.366*	.248	.035	.017	.071	.052	-.022	-.109
6							.176	-.044	-.046	-.094	-.083	-.278	-.340
7								.072	.368*	-.240	.096	-.197	-.020
8									-.103	-.316	-.248	-.248	-.147
9										.357*	.843***	.193	.057
10											.804***	.414*	.145
11												.362*	.139
12													.221
13													
14													
15													
16													
17													
18													
19													
20		Sig. level	.05	r =	.320 (*)								
21			.01	r =	.415 (**)								
22			.001	r =	.515 (***)								
23													
24													
25													

TABLE 4 PRODUCT MOMENT CORRELATION MATRIX - Boys (n = 35)

TABLE 4 (cont'd) PRODUCT MOMENT CORRELATION MATRIX - Boys (n = 35)

	14	15	16	17	18	19	20	21	22	23	24	25
1	.161	.069	.238	.110	.365*	.000	-.329*	-.147	-.255	-.252	.231	.280
2	.004	-.125	.259	.036	.097	.000	-.050	-.009	-.348	-.345*	-.006	.185
3	.258	.101	.337*	.297	.025	.000	-.175	.265	-.242	-.089	.097	.187
4	.272	.016	.152	-.090	.064	.000	-.020	.175	.248	-.253	-.098	.290
5	.013	-.066	.300	.176	.257	.000	-.064	.003	.031	-.182	.195	.040
6	.139	-.142	.363*	.329*	.398*	.000	-.305	-.058	-.224	-.339*	.001	.219
7	.036	.009	.039	.160	.173	.000	-.437*	.508**	-.165	-.258	-.003	.068
8	.075	-.052	.100	.081	.148	.000	.089	-.055	-.271	-.186	-.076	.150
9	.216	.196	.134	-.149	-.171	.000	-.072	.848***	.126	.142	-.166	.231
10	.029	.116	.119	-.347*	-.160	.000	.084	.164	.699**	.486**	.044	-.004
11	.154	.192	.154	-.295	-.201	.000	.003	.635***	.483**	.370*	-.081	.145
12	.111	.220	-.109	-.196	-.114	.000	-.034	.202	.471**	.764***	.034	.083
13	.164	.781***	-.416**	-.452**	-.401*	.000	-.099	.052	.009	.281	.598***	.040
14		.745***	.184	-.156	-.135	.000	.020	.074	-.034	.300	.323*	.771***
15			-.165	-.405*	-.357*	.000	-.054	.082	-.016	.380*	.610***	.515**
16				.117	.286	.000	.135	.020	-.017	-.057	-.106	.386*
17					.695***	.000	.010	-.086	-.276	-.270	-.290	-.055
18						.000	-.011	-.142	.018	-.165	-.178	.034
19							.000	.000	.000	.000	.000	.000
20		Sig. level	.05	r =	.320 (*)			-.187	.160	.012	-.201	.063
21			.01	r =	.415 (**)				.187	.144	-.210	.096
22			.001	r =	.515 (***)					.471**	-.018	.044
23											.105	.110
24												.183

TABLE 5 PRODUCT MOMENT CORRELATION MATRIX - Girls (n = 44)

	1	2	3	4	5	6	7	8	9	10	11
1	1.0	.576***	.315*	.000	.055	.532***	.021	-.034	-.010	-.095	-.059
2			.213	.107	-.003	.445**	-.067	-.070	-.012	-.080	-.053
3			.222	.222	.320*	.285*	.370*	-.142	.020	-.205	-.097
4					.062	-.048	-.121	-.020	.075	-.083	.009
5						-.018	.089	.013	-.133	-.065	-.131
6							.081	-.111	-.206	-.365*	-.347*
7								-.020	-.020	-.127	-.083
8									.148	.094	.159
9										.229	.850***
10											.708***
11											
12											
13											
14											
15											
16											
17											
18											
19											
20		Sig. level	.05	r =	0.285 (*)						
21			.01	r =	0.377 (**)						
22			.001	r =	0.460 (***)						
23											
24											
25											

TABLE 5 PRODUCT MOMENT CORRELATION MATRIX - Girls (n=44)

TABLE 5 (cont'd) PRODUCT MOMENT CORRELATION MATRIX - Girls (n = 44)

	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	.148	-.202	-.026	-.150	-.037	.228	.177	.000	-.231	.027	-.079	-.173	-.160	-.037
2	.487***	-.170	-.015	-.104	-.116	.167	.205	.000	-.366*	.062	.056	.173	-.139	-.088
3	-.072	.167	-.031	.092	.030	.133	.219	.000	.013	.137	-.102	-.192	-.044	-.155
4	.141	.214	-.052	-.174	.075	.057	.003	.000	-.293*	.182	.046	-.135	.096	.015
5	.099	.086	-.346*	-.154	-.256	.033	-.109	.000	.012	-.049	.027	.027	.005	-.488**
6	-.001	-.121	.175	.027	-.056	.049	.085	.000	-.289*	-.211	-.227	-.115	-.138	.062
7	-.279	.041	-.020	-.040	.062	.087	.229	.000	.282	-.055	-.135	-.249	-.077	.136
8	-.104	-.044	-.028	-.047	.051	.086	-.083	.000	.005	.113	.020	.008	-.123	.058
9	-.036	-.108	-.254	-.083	.266	-.106	-.152	.000	.108	.907***	.373*	.020	-.030	.152
10	.169	-.343*	-.135	-.311*	.077	.126	.029	.000	.107	.226	.665***	.164	-.184	.042
11	.066	-.264	-.111	-.108	.235	-.009	-.095	.000	.137	.780***	.630***	.103	-.122	.132
12		-.104	-.013	.062	-.006	.077	.075	.000	-.171	.020	.222	.589***	.230	.052
13			.224	.802***	.154	.017	-.085	.000	.145	-.128	-.294*	.146	.686***	.111
14				.761***	.236	.030	.006	.000	-.148	.191	-.022	.198	.087	.707***
15					.247	.030	-.052	.000	.005	.032	-.209	-.024	.510***	.507***
16						.009	.106	.000	.074	.166	.130	-.058	.217	.352*
17							.784***	.000	.011	-.028	-.220	-.057	-.112	.116
18								.000	-.071	-.094	-.298*	.047	-.093	.044
19									.000	.000	.000	.000	.000	.000
20		Sig. level	.05	r =	0.285 (*)					.065	.104	-.054	.228	.051
21			.01	r =	0.377 (**)						.385**	.061	.034	.121
22			.001	r =	0.460 (***)							.158	-.007	.150
23													.370*	-.108
24														.078
25														.000

TABLE 5 (cont'd) PRODUCT MOMENT CORRELATION MATRIX - Girls (n=44)

TABLE 6 CORRELATION MATRIX (Parts I, II & III) Boys n = 27

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	.462*	.265	-323	.571**	.728***	.308	.092	-028	-216	-145	-215	-133	235	060	303	128	432*	0	-283
2		.074	-033	436*	413*	-039	.064	.078	-267	-099	-216	-248	043	-141	324	083	178	0	-015
3			.160	417*	408*	521**	-243	346	015	256	083	-182	342	095	418*	388*	044	0	-251
4				207	025	331	249	071	020	062	-147	-266	299	011	171	-135	059	0	-083
5					432*	154	033	-011	085	041	123	-251	072	-124	439*	204	338	0	-062
6						225	-060	-047	-183	-140	-346*	-355	140	-152	451*	358	405*	0	-399*
7							007	481**	-198	229	-111	-116	060	-040	208	234	278	0	-432*
8								037	-136	-052	-241	-124	171	024	228	001	149	0	120
9									184	821***	233	050	214	171	124	-091	-135	0	-118
10										712***	490**	128	-092	029	-006	-383	-207	0	085
11											451*	110	099	138	085	-288	-216	0	-035
12												287	.100	259*	-223**	-289*	-234	0	-040
13													152	776***	-513***	-433*	-385*	0	013
14														742***	114	-007	-097	0	056
15															-275	-298	-323	0	045
16																259	345	0	068
17																	649***	0	-123
18																		0	-096
19																			00
20																			
21																			
22																			
23																			
24																			
25																			
26	Sig. level .05 r = .360 (*)																		
27	.01 r = .465 (**)																		
28	.001 r = .575 (***)																		
29																			
30																			

TABLE 6 CORRELATION MATRIX (Parts I, II & III) Boys n = 27

TABLE 6 (cont'd) CORRELATION MATRICES (Parts I, II and III)

Boys n = 27

	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1	-152	-186	-346	270	346	-071	340	304	190	-419	-219	-298	048	282	553	303	-340	007
2	-002	-286	-403	048	256	060	072	067	293	022	075	-301	085	155	230	397	-290	-141
3	323	-238	021	114	316	304	241	294	213	-197	068	-095	-018	302	183	051	005	174
4	146	221	-235	-129	340	-094	044	044	-329	-096	-236	156	-138	181	042	-125	-081	189
5	-060	097	-196	149	173	145	044	046	202	-174	150	-273	-055	196	267	375	-338	-192
6	-131	-402	-400	150	173	-073	304	254	274	-392	-180	-260	166	263	404	482	-128	108
7	608	-053	-198	-107	188	162	285	334	-044	-161	132	070	274	342	263	-038	-131	075
8	025	-139	-112	019	196	-064	095	193	205	049	-110	042	-239	-262	128	-014	-113	176
9	878	-046	105	-318	305	484	139	310	108	335	218	292	-065	037	-042	-130	062	028
10	034	621	508	-136	-054	067	-243	-295	-188	224	-060	00	-080	-016	-052	-040	434	090
11	647	328	369	-306	186	386	-041	050	-032	369	123	208	-093	017	-060	-116	296	070
12	-201	468	764	037	-015	421	169	092	005	058	271	000	095	076	-206	-190	204	-082
13	-015	044	279	562	138	126	-091	-128	137	-068	-174	186	099	152	101	-155	026	-067
14	098	-094	248	347	839	174	410	327	096	-055	002	198	-053	337	270	-066	109	272
15	053	-030	348	604	630	196	199	122	154	-081	-116	253	034	318	241	-147	088	127
16	012	-143	-228	-119	382	-169	018	091	187	094	-018	000	-114	065	265	260	031	-151
17	-111	-474	-206	-285	-136	069	034	130	251	-225	393	000	107	064	191	104	-216	073
18	-167	-120	-174	-191	-076	-017	177	255	-039	-173	111	-169	-011	239	463	394	-145	-171
19	00	00	00	00	00	00	00	00	00	00	00	000	000	000	000	000	000	000

Sig. level .05 r = .360 (*)
.01 r = .465 (**)
.001 r = .575 (***)

TABLE 6 (cont'd) CORRELATION MATRICES (Parts I, II and III) Boys n = 27

TABLE 6 (cont'd) CORRELATION MATRICES (Parts I, II and III)

Boys n = 27

	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
20	-178	151	060	-093	030	027	-365*	-216	-140	285	153	00	-362*	-122	-031	106	-084	-300
21		086	104	-348	129	484**	206	361*	-125	250	259	273	-024	139	-157	-121	-040	-053
22			497*	-139	-070	-128	-091	-198	-597***	248	026	000	-070	142	-104	-117	206	-255
23				069	060	315	315	216	-180	108	289	000	-056	032	-159	-281	354	061
24					306	-072	230	113	337	-225	-478**	-355	-055	195	206	079	085	-017
25						074	277	182	108	059	-064	299	079	325	368*	-019	147	224
26							180	247	040	022	393*	173	009	104	-134	093	-165	-025
27								887***	046	-037	-077	-288	-089	299	165	128	043	222
28									079	-006	-089	-314	-300	208	164	174	-107	075
29										030	041	-148	019	-113	089	025	-189	012
30											-026	131	-464	-254	-361*	-087	211	-265
31												226	400*	-034	-129	-151	-295	-072
32													200	086	00	-167	00	069
33		Sig. level		.05	r =	.360 (*)								166	082	-100	042	303
34				.01	r =	.465 (**)									621**	487**	-109	-161
35				.001	r =	.575 (***)										588***	-193	025
36																	-291	-216
37																		414*

TABLE 6 (cont'd) CORRELATION MATRICES (Parts I, II and III) Boys n = 27

TABLE 7 CORRELATION MATRIX (Parts I, II and III)

Girls n = 22

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	660**	354	094	073	600**	111	-215	-176	017	-113	217	-389	-103	-315	-199	208	270	000	-180
2		302	107	039	393	170	-174	059	109	102	650***	-192	001	-129	-270	210	241	000	-258
3			298	426*	400	333	-271	-137	-308	-267	068	262	118	238	026	120	201	000	-091
4				291	-094	-198	-025	-073	214	068	300	263	134	247	-024	256	040	000	-635***
5					014	201	-131	-363	-148	-335	039	159	-344	-075	-248	187	-003	000	-059
6						354	-153	-311	-326	-397	-123	-055	173	054	-247	067	120	000	240
7							-049	-209	-468*	-406*	-185	115	282	225	-022	-023	215	000	-160
8								00	048	027	-295	-021	-132	-084	114	239	000	000	000
9									269	845***	227	-269	248	-050	178	-345	-161	000	-082
10										743***	408*	-561**	-358	-565**	120	-011	-112	000	-174
11											384	498*	-027	-349	191	-246	-174	000	-155
12												-103	015	-061	-412*	276	206	000	-227
13		Sig. level		.05	r =	.405(*)							384	874***	074	066	-012	000	-056
14				.01	r =	.515(**)								784***	150	-147	021	000	-248
15				.001	r =	.630(***)									128	-033	003	000	-170
16																-475*	-351**	000	120
17																	-837***	000	050
18																		000	120
19																			

TABLE 7 (cont'd) CORRELATION MATRIX (Parts I, II and III)

Girls n = 22

	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1	-141	017	-213	-314	-051	151	-017	-239	408*	068	122	222	144	-017	-099	-346	121	.241
2	160	226	212	-138	-211	377	-154	-282	-093	-270	-213	048	182	155	274	-253	258	-024
3	031	-191	-185	072	-179	-003	-284	-336	526*	-247	301	-058	-134	149	327	108	241	314
4	022	160	-126	00	-107	-274	067	149	-143	165	000	140	-090	159	054	169	065	-047
5	-191	-148	-236	-081	-447*	-024	-255	-123	362	-086	303	064	082	-099	043	148	063	043
6	-310	-321	-277	-218	-054	-042	-129	-156	431*	-141	175	-147	197	100	131	-217	240	291
7	-210	-336	-188	084	-137	148	-478*	-313	217	-055	-051	-069	101	003	-274	009	-055	206
8	00	-247	025	-189	-182	126	291	-447*	-138	303	-157	-276	-036	-042	-236	-067	-077	206
9	931	215	376	-025	-141	206	-067	-136	-326	187	-294	-020	115	-085	-008	-241	-177	-310
10	252	687**	168	-342	-063	007	036	106	-431*	176	-042	050	240	-090	029	-060	-070	-245
11	787**	532*	355	-211	-133	147	-027	-036	-466*	228	-228	014	213	-110	085	-201	-161	-352
12	284	447*	471*	-097	-111	071	-199	-198	-456*	-103	-271	020	026	092	398	-025	024	-554**
13	-250	-431*	111	592**	187	-106	159	187	061	-327	079	-054	-220	114	071	492*	185	004
14	133	-163	-166	120	481*	-015	-150	-169	-183	-032	-163	-260	-430	186	132	314	-198	-125
15	-098	-375	-013	461*	379	-079	028	037	-056	-237	-033	-173	-374	174	117	495	020	-064
16	166	286	-265	292	209	-071	-056	-167	-058	-277	189	029	-240	216	-199	225	-293	166
17	-275	-340	021	-047	-074	-276	265	430*	129	179	-070	-085	-201	267	133	362	-015	-130
18	-149	-368	-010	074	-016	-216	133	178	156	193	043	107	-127	175	042	298	015	-047
19	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	000

Sig. level .05 r = .405(*)
.01 r = .515(**)
.001 r = .630(***)

TABLE 7 (cont'd) CORRELATION MATRIX (Parts I, II and III)

Girls n = 22

	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
20	-078	-134	018	197	141	-072	-038	-051	227	-187	293	-199	-256	-075	093	241	-130	-134
21		277	442*	050	-235	278	-160	-126	-304	015	-273	-019	107	-007	072	-224	-069	-280
22			077	-049	070	116	-163	-218	-576**	-250	-072	202	-041	210	305	-103	-010	-260
23				348	-029	278	-031	170	-348	-151	-284	051	429*	-195	075	-233	258	-396
24					163	-059	005	135	-072	-538**	-006	207	035	214	-013	329	269	-225
25						-006	100	015	-081	-131	332	007	-400	033	312	280	-084	032
26							124	-001	-029	-202	136	-015	218	-408*	023	-290	462*	343
27								727**	090	204	008	191	-140	073	016	132	223	282
28										219	-255	-012	-016	148	-109	340	142	-054
29									-05	-0	.380	-136	008	-133	-118	-008	058	464*
30											04	202	101	-390	-304	-243	-282	053
31												308	-062	-491*	119	089	234	510*
32													275	-100	022	-259	213	145
33		Sig. level		.05	r =	.405(*)								-507*	-362	-576**	462*	050
34				.01	r =	.515(**)									380	405*	-252	-227
35				.001	r =	.630(***)										120	253	-109
36																	257	-304
37																		393

TABLE 8 INTERCORRELATIONS BETWEEN CREATIVITY and I.Q. MEASURES.

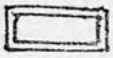
(i) BOYS:

	NV I.Q.	V Cr.	NV Cr.I	NV Cr.II	Cr.Story	Cr.Pic.
Verbal I.Q.	.48**	.22	.18	.46**	11	30
NV I.Q.		.06	-09	.37*	04	07
V Cr.			.23	.52***	30	29
NV Cr.I (Circles)				.27	-09	04
NV Cr.II (Inc. Des.)					18	05
Cr. Story						.13
Cr. Picture						

(ii) GIRLS:

Verbal I.Q.	.58***	.32*	05	06	23	-24
NV I.Q.		21	11	00	17	-28
V Cr.			22	.32*	13	-34*
NV Cr.I				.06	06	15
NV Cr.II					03	-12
Cr. Story						.43*
Cr. Picture						

* Sig. at .05 level
** Sig. at .01 level
*** Sig. at .001 level


n = 35(boys) 44(girls)

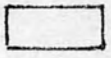

n = 27(boys) 22(girls)

TABLE 9 MEANS and SIGNIFICANT RESULTS of ANALYSES OF VARIANCE (Sex x Class)

(Creativity & I.Q. Scores in the Cells)

	Boys		Girls		Analyses of Variance		
	ABC n=22	DEF n=13	ABC n=10	DEF n=34	SEX	CLASS	SxC
V I.Q.	106	98.14	109	103.8		*	
NV I.Q.	108.9	107.8	111.7	102.4		*	
V Cr.	11.59	8.61	6.00	6.14	*		
NV Cr.I	3.63	3.53	4.80	2.20			
NV Cr.II	5.22	4.93	4.10	4.14			
Cr.(Story)	3.18	3.15	3.00	3.02			
	n=16	n=11	n= 4	n=18			
Cr.(Picture)	3.93	3.00	3.75	3.61			

* p = sig. at .05 level (3.96)

** p = sig. at .01 level (6.95)

*** p = sig. at .001 level (11.6)

For full details, see Appendix Table A 9.

Suggested Structure of the Creativities

FIGURE 1: The Complexity of Creativity Measures

BOYS

TESTS:	STRUCTURE					
	Intelligence	Verbal Creativity	Specific Factors			
			Non V. I	Non V. II	Story	Picture
Uses		X				
Circles,		X	X			
Incomplete Designs	X	X		X		
Story		X			X	
Picture						X

GIRLS

TESTS:	STRUCTURE				
	Intelligence	Verbal Creativity	Free Creativity	Specific Factors	
				Non V.I	Non V. II
Uses	X	X			
Circles		X		X	
Incomplete Designs		X			X
Story			X		
Picture			X		

Chapter 2. Creativity and the ability to be "open to experience."

The hypotheses to be discussed are:

Hypothesis 3:

Children who are "open to experience" *(as measured by expressed aggression, coping with and remembering emotionally arousing material) will be creative.

Hypothesis 4:

A Child's "openness to experience"* will differ according to his/her social class and sex.

- Middle class children will be more "open to experience" than working class children.
- Middle class boys will be more "open to experience" than middle class girls.
- Working class girls will be more "open to experience" than working class boys.

The scores which will allow us to accept or reject these hypotheses arise from

(i) the subject's "coping" and "avoiding" responses to the Sentence Completion test;

(ii) the subject's ability to refute parental authority and to express natural ambivalence. This was measured by the amount of aggression expressed in the Sentence Completion test (S 1, 4 & 5), the Tell a Story test and the degree of acknowledgement of hostile feelings in the Questionnaire (Part III);

(iii) the subject's ability to use aggression positively in the production of stories with happy and satisfactory endings; (Jackson 1954)

(iv) the subject's ability to recall painful and emotive material without repressing it. (Part III)

1. Hypothesis 3:

1.1 Coping and Creativity

(i) Intercorrelations between "coping" scores obtained from the Sentence Completion test are set out in Tables 10 (i) and (ii). Only 3 out of 20 correlations reached the 5% level of significance. An overall "coping" score was thus not used, but items 1, 4 and 5 were grouped into one score for purposes of Analyses of Variance. These 3 items gave the best set of inter-correlations of any 3 items containing sentences 1 and 5 which dealt with fathers' commands.

(ii) Correlations between "coping" scores and the creativity scores are set out in Tables 11 and 12. Only 2 out of a possible 25 correlations were significant for boys. These were negative and both related to scores on the Story test. Boys who coped with the emotional implications of the sentences (Sentence Completion test) told the least creative stories. (This finding was substantiated in the multiple regression analysis where an "avoiding" response to S.3 (Sentence Completion) positively predicted the creativity of the story - page 307.)

Only 1 of the 25 correlations was significant for girls. Again, the relationship between coping and creativity (Incomplete Designs) was in the direction opposite to that hypothesised. Girls who avoided the implication of Sentence 4 (Sentence Completion test) were the most creative. (This finding failed to emerge in the multiple regression analysis)

(iii) Results of the 15 3-way analyses of variance carried out on the 5 creativity scores (Coping (combined items 1, 4 & 5) x Sex x Class; Coping (item 2) x Sex x Class; Coping (item 3) x Sex x Class) are given in Tables 13 i, ii, & iii.

Three significant results involving coping responses emerged. Verbal creativity (Uses) was related to successful coping on the composite score of items 1, 4 & 5. Non-verbal creativity I (Circles) was related to successful coping on the composite score of items 1, 4 & 5 also. Non-verbal creativity I (Circles) was related to successful coping for girls on item 3, but to unsuccessful coping for boys on this item (Figure 2).

(iv) Overall, the results indicate that "coping" was not positively related to creativity. The two wholly positive results were between coping (S 1, 4 & 5) and scores on the Uses and Circles tests, and these occurred only in the Analyses of Variance where broad categories of coping and avoiding were involved. This finding held good for all the social class and sex groupings.

The other significant results were in the direction opposite to that hypothesised. Those boys telling creative stories (Tell a Story test)

tended to avoid the implications of an emotionally toned sentence completion stem and those girls gaining high scores on the Incomplete Designs test avoided the implications too. The results obtained for the Circles test and item 3 were positive for girls but negative for boys.

Overall, Hypothesis 3 must be rejected with respect to the relationship of coping to creativity.

1.2 Aggression and Creativity

(i) Measures of aggression were obtained from the subjects' responses to Sentences 1, 4 and 5 of the Sentence Completion test where reactions to parental command (S 1 & 5) and the sibling rivalry position (S4) was assessed. The amount of aggression expressed in the Tell a Story test was also obtained. (The picture presented to the subjects depicted a conflict situation between a child monkey and an adult monkey.)

The inter-correlations between these 4 measures are given in Tables 10 (i) and (ii). Aggression expressed in the Story test was significantly related to aggression expressed in Sentence 4 (Sentence Completion test) for both sexes. There seemed no grounds for amalgamating Sentence Completion test scores, however.

(ii) Correlations between creativity and aggression are set out in Tables 11 and 12. Only 2 out of a possible 20 correlations were significant for boys - between aggression expressed in the Story and Uses (verbal creativity) and between aggression expressed to parental command (S1) and the creativity of the picture (Picture test - Part III). Both these results were verified in the multiple regression analyses where these two measurements of aggression were significant predictors of the respective creativity scores. (p. 206 & 207.)

For girls, only one of the 20 correlations was significant and this was in the direction opposite to the hypothesised. Girls who expressed aggression to their siblings (S 4, Sentence Completion test) gained low scores on the Incomplete Designs test. This finding was confirmed in the multiple regression analysis. (P. 206.)

(iii) In the Analyses of Variance where broad categories high (score 3 - see Appendix) and low (score 2 or 1 - see Appendix) aggression were used to divide the creativity scores (Aggression x Sex x Class) 5 significant F ratios were found (from a possible 20). These did not all indicate the same direction of relationship between creativity and aggression (Tables 14 (i), (ii) & (iii), 15, Fig. 3, 4 &5. See Summary Table 16.

(iv) Looking at each measure of creativity in turn the following statements can be made:

USES - for boys, expression of aggression in the story was related to scores on the Uses test and was a predictor of this variable (multiple regression).

CIRCLES test (non-verbal creativity I) - both boys and girls who expressed aggression in response to parental command in S.1. (Sentence Completion test) & S.5 (Sentence Completion test) were more creative on the Circles test than were the non aggressive children. In both analyses, interactions occurred. Figure 3 shows the Response main effect for Sentence Completion test, S.1. At the high level of aggression, the middle class children were more creative than the working class children, but this broke down at the low level of aggression. Figure 4 shows the Response main effect for S.C.T. 5.

INCOMPLETE DESIGNS (non-verbal creativity II) - aggression in the story was positively related to creativity for boys but negatively for girls, whereas aggression in the sibling rivalry position (S 4, S.C.T.) was negatively related to creativity for both boys and girls.

Creativity of the Story: In S 5 (S.C.T.) those children who expressed aggression to parental command gained the lowest creativity scores, for both sexes. Lack of aggression was a predictor of this test for girls only (multiple regression).

Creativity of the Picture: boys responding aggressively to parental command (S1, S.C.T.) gained the highest scores on this test.

(v) The results indicated that in terms of raw scores for expressed aggression, straight forward correlations yielded few significant results. Where broad categories - high and low aggression - were used, some relationship between creativity and aggression emerged.

Apart from the Circles test, the results for girls consistently suggested a negative relationship between aggression and creativity thus Hypothesis 3 is rejected for girls, though it should be noted that lack of aggression proved to be a predictor of creativity for the Incomplet Designs test and the Story test.

The results for boys were less consistent; on the Uses, Circles and Make a Picture tests there was a positive relationship between aggressior and creativity, but the relationship was negative for the Story test and sometimes negative, sometimes positive for the Incomplete Designs test. Hypothesis 3 is only partially accepted for boys. Expression of aggression is positively related to creativity as measured on the Uses, Circles and Picture tests.

(vi) In accordance with Jackson's (1954) view that it was the outcome of expressed aggression rather than the gross amount which distinguished the "healthy" individual from the delinquent, an investigation was carried out on the outcome of the aggressive themes produced in the stories (Tell a Story test). It was suggested in the Review that those children whose parents, being "child oriented", tolerated the expression of negative feelings and who had not received harsh and punitive treatment would be less likely to repress feelings and experiences; further they woul have had the opportunity to build up a strong ego. They would thus have a large body of material available to them in their creative output, and their ego strength, we have suggested, would allow them to use the negative and aggressive feelings aroused in situations positively in creative output.

The stories were sorted according to the outcome of the aggressive theme and 4 categories emerged:

1. aggressive theme resolved positively with fruitful outcome;
2. aggressive theme continued by child refuting parental authority;
3. aggressive theme continued by parent sending child to bed or telling him off;
4. no aggressive theme;

These were non-linear in content.

A one-way analysis of variance was carried out on the creativity scores of the children falling in the 4 different categories (Table 17). This failed to produce evidence to show that the mean creativity scores obtained from the four groups differed significantly according to how the subjects dealt with aggression.

1.3 "Being in contact with feelings" and Creativity

(i) A multiple-choice, first person Questionnaire was presented (in Part III of the investigation) to the subjects and they were asked to choose which of three ways of behaving was most typical of them. The lack of correlation between the responses to the 4 items in the Questionnaire meant that each of the 4 results had to be considered separately. (Table 10 gives the intercorrelations.)

(ii) Correlations between the creativity measures and the responses to the Questionnaire are set out in Tables 11 and 12 (positive correlations indicating that "being in contact with feelings" was related to creativity).

There were no significant correlations for girls nor did responses to the Questionnaire predict any of the creativity scores in the multiple regression analyses.

Only one significant correlation emerged for boys - the creativity level of the story (Story test) was positively associated with responses to Q.2 of the Questionnaire. (This finding was substantiated by the multiple regression analysis.)

The multiple regression analysis for the creativity of the picture indicated that responses to Q.3 of the Questionnaire were negatively associated with creativity - a result opposite in effect to the previous result (Page 207.)

(iii) Analyses of Variance could only be carried out on the responses to Q.3 and Q.4 of the Questionnaire, owing to the small number of subjects in some of the categories. In the analyses completed it was necessary to collapse two of the categories, thus altering somewhat the meaning of the results, i.e.

Category 1 implied not acknowledging;
Category 2 implied acknowledging but not acting out;
Category 3 implied acting out negative feelings.

Categories 1 & 2 were collapsed. Thus perhaps the most socialised

way of behaving (Cat. 2) was combined with the most highly defensive reaction (Cat. 1). It was not surprising, therefore, to find relationships emerging from the analyses in quite the opposite direction to that hypothesised.

(iv) The Analyses of Variance are given in Tables 18 (i) and (ii). Responses to Q. 3 produced an (R x S) interaction effect (Figure 6). Those boys who did not express th eir negative feelings in response to the Questionnaire (Q. 3) got higher scores on the Incomplete Designs than those who did i. e. against the hypothesis, whilst the reverse and predicted effect occurred for girls.

Responses to Q. 4 indicated that in all th e social class and sex groupings those children who did not express their feelings gained the highest scores on the Uses test. (Boys scored higher than girls, and middle class higher than working class) (Figure 7) The correlation between the Uses test and response to Q. 4 was sizeable for girls (.30).

A social class/response interaction occurred in the analysis of the scores from the Story test (Figure 8). Working class children who expressed their feelings told more creative stories than those who did not express their feelings whilst the reverse effect was true for the middle classes.

(v) In looking at the results for girls, it can be said that creativity as measured by the Uses, Tell a Story and Picture tests does not appear to be related to the ability to be in contact with feelings as measured in a first-person questionnaire. Creativity as measured by the Incomplete Designs test appears to be related to this ability.

(vi) For boys, the ability to be in contact with feelings (as measured in a questionnaire) does not appear to have a positive relationship to creativity as measured by the traditional tests; however, it is positively related to creativity as measured by the Tell a Story test.

Hypothesis 3 for boys is rejected for all of the measures of creativity except the Tell a Story test where it is accepted.

Hypothesis 3 for girls is rejected for all the measures of creativity except the Incomplete Designs test where it is accepted.

1.4 Recall and Creativity

(i) The ability to recall emotionally arousing material (in this case the way parents treated the children when they had fallen in a pond) was taken to be indicative of lack of repression.

(ii) Correlations set out in Tables 11 and 12 indicated that there were no significant correlations for girls, though there were several sizeable correlations worthy of mention (the small size of the whole sample (n = 49) necessitated considerably high correlations for significance.)
Recall of the beating (R 3) given by the parents (a predictor in the multiple regression equation) correlated with the creativity of the story r = .36, and with the creativity of the picture r = .34. Recall of the permissive parents' dealing with the child (R 2) correlated with verbal creativity scores r = .33.
For boys, there was one significant correlation - those boys who recalled the beating (R 3) gained high scores on the Incomplete Designs test. There was a sizeable correlation between R 1 (recall of the punitive parents' treatment) and verbal creativity of r = .30. However, multiple regression equations failed to indicate that recall was a predictor for any of the creativity measures for boys.

(iii) The Analyses of Variance produced 3 out of a possible 15 significant results (Table 19)
It was found that those girls who recalled the punitive parents' treatment of their children (R1) gained low scores on the Incomplete Designs test, while those who forgot gained high scores. (This was against the hypothesis.) The reverse of the expected effect occurred for boys (Figure 9).
R 2 (recall of the permissive parents' treatment of the child) was related to greater creativity in telling a story, and R 3 (recall of the beating) was positively associated with high scores on the Incomplete Designs test.

(iv) Clearly, recall is likely to be affected by intelligence as well as the mechanism of repression - indeed remembering scores contribute to intelligence tests scores in the W.I.S.C., among other tests. Intelligence was seen to be correlated with recall for boys and in view of this it was thought to have contributed to the sizeable correlations between recall and creativity in the three cases mentioned. Partial

correlations carried out between (a) Verbal Creativity, Recall I and Intelligence and (b) between Incomplete Designs, Recall 3 and Intelligence revealed that the remaining correlations between recall and creativity were indeed insignificant (r = .24 in both cases).

(v) In conclusion, Hypothesis 3 is rejected. Although there does appear to be a significant relationship between recall and scores on the Incomplete Designs test this appears to depend mainly in the intelligence factors operating for both measures.
Recall, taken as a measure of "being in contact with feelings", does not appear to be related to creativity for either sex.

In Summary, over the four measures of "openness to experience", coping was not found to be related to creativity; some measures of aggression - with boys only - were found to be related to creativity; contact with feelings was only related to one of the creativity measures for boys and one (a different one) for girls; recall of emtional material was not related to creativity. Overall, the evidence in support of Hypothesis 3 must be regarded as scanty, and it would not justify any generalisation that "openness to experience" relates to creativity.

2. Hypothesis 4: "Openness to experience" - Social Class and Sex.

(i) Correlations between social class and "openness to experience" measures are set out in Tables 11 and 12. Only one significant correlation between social class and the "openness" measures emerged and that was for boys only. Those boys who in response to one item of the Questionnaire (Q.3) were able to acknowledge and express their feelings tended to be middle class.
The Analyses of Variance (Sex x Class) carried out on the personality test scores are set out in Table 20. The Analyses of Variance produced only 3 significant results out of a possible 14. Those children who told the most aggressive stories were found to be working class for both sexes.

Girls were more able to acknowledge and express their feelings (Q.3) than boys.

Those children who acknowledged and expressed their feelings in the Questionnaire (Q.4) were middle class.

(ii) The results obtained here were in the main insignificant and Hypothesis 4 is rejected for both sexes. The social class and sex of the children being investigated did not appear to affect their ability to be "open to experience". The only significant findings (obtained from the Questionnaire) give tentative support to the belief that middle class children acknowledge and express negative feelings to a greater extent than working class children..

working class children.

- Middle class children were not generally more open to experience than/
- Middle class boys were not more open to experience than middle class girls.
- Working class girls were not more open to experience than working class boys.

3. General Discussion:

Many of the theoretical writers who have drawn attention to the personality characteristics of creative individuals have talked about their ability to be "open to experience" and to be in contact with and express their feelings.

This part of the research was designed to isolate certain aspects of behaviour which could be said to reflect this "openness to experience". It was hoped to be able to show that not only were these personality characteristics related to creativity as measured in the creativity tests, but also that they were distributed in the population tested, according to the social class and sex of the children.

The difficulties in investigating any aspect of personality are well known. They are, however, considerably increased when the particular aspects to be considered imply a large unconscious element. So much psychological literature has been produced making cases for and against the use of projective tests that the present investigation was undertaken with modest expectations. It was hoped that some evidence would emerge from the large battery of measures to substantiate the theoretical claims about "openness" (Rogers 1959, Barron 1963, Kubie 1965, Storr 1972).

Particular aspects of the accessibility of experiences ("openness to experience" were isolated for investigation:

1. that of being able to "cope" with negative material in the form of a Sentence Completion test and deal with it;
2. that of being able to express negative feelings - in this case aggression - felt in difficult situations (Sentence Completion test, Questionnaire, Tell a Story test) rather than denying them;

3. that of being able to use the ambivalent feelings aroused in conflict situations productively (Tell a Story test);

4. that of being able to recall negative material rather than repressing and forgetting it. (Remembering test.)

It is useful to look at some general problems encountered in measuring unconscious functioning. One of the main difficulties occurred in scoring and interpreting the responses to the projective tests - a common problem with all projective tests. In looking at a response, such questions emerged as the following:

- Was the subject saying what he would really do in a situation or what he would like to do ?

- Was the subject, in expressing his ambivalence, showing us the freedom with which he dealt with negative feelings or were they the result of continual frustration of impulse which normally was not expressed ?

- Was the subject able to use the aggression expressed constructively, as Jackson's (1954) non-delinquent girls had done, or was the expressed aggression pathological and purely destructive.

Of necessity, a simple view was taken. It was decided that even if the negative feelings expressed were the result of displacement (i.e. aggression felt to punitive parents but not acted out in real life) at least negative feelings were acknowledged and as such indicated that these feelings were available to the subjects even if there was no ability to use the experiences. However, even when attempts were made to look at the outcome of aggression expressed in telling a story, there seemed to be no relationship between outcome and any of the creativity scores.

Apart from the difficulties experienced in interpreting the projective material there were further difficulties in understanding and dealing with the lack of relationship between apparently similar test situations, i.e. subjects' responses to seemingly similar sentences in the Sentence Completion test failed to correlate to any great degree. Further, there was little relationship between the different measures of "being open to experience".

It is suggested here that there may have been some mechanism occurring in the individual's functioning which affected the accessibility of negative feelings differentially according to how soon after the beginning of the permissive testing that the response occurred. Pine and Holt's (1960) concepts of "primary process" and "ego control" mechanisms help to explain this.

Their view is that repressed and suppressed material (primary process) becomes accessible to consciousness in the creative process and this raw material is forged into the creative product through the work of the ego control mechanisms. Both these processes are necessary for a creative product to emerge, they say. They go further to suggest that when subjects are pushed from an evaluation-laden situation (i.e. the normal classroom situation) into an evaluation-free setting (i.e. the permissive testing situation), then there is an enormous release of primary process material - hostility and aggression pour out. With time, they say, the ego control mechanisms achieve prominence (if the environment remains free and the examiner supportive).

Throughout the present research, emphasis has been placed on the amount of primary process material expressed, with the most aggressive responses being given the highest marks. Little attempt has been made to look at whether the subject was able to use ego controls to channel the primary process material into the creative product. Further, no attempt was made to assess when an individual subject started bringing in ego controls to his responses. Perhaps the lack of correlation between the responses to similar sentence stems in the Sentence Completion test and the responses to questions in the Questionnaire can be explained in this way. It is interesting that, for boys, an aggressive response to Sentence 1 (S.C.T.) was a positive predictor of one of the creativity measures whilst an aggressive response to Sentence 5 (the last sentence in the S.C.T.) proved to be a negative predictor of another of the creativity measures. Similarly, in the Questionnaire a high degree of expression of feeling (Q.2) was a predictor of one of the creativity measures whilst a high degree of expression (Q.3) was a negative predictor of another creativity measure. These things suggest that quick reaction to permissiveness by aggression and quick introduction of ego controls might turn out to be important aspects of creativity - "reactivity" would be the area for investigation.

Clearly, 'accessibility of experiences' and 'freedom from defences' involve a complex network of relationships. That expression of feelings - particularly hostility and aggression - and acceptance of ambivalence play a part in the creative process seems likely and attempts have been made to measure them here. If the "primary process" is to be transformed into the creative product there seems to be a case for the importance of voluntary

inception of controls. Indeed, expression of "primary process" without the intellect and ego being involved in moulding and channelling it, would be considered pathological and would prevent th e individual functioning in the normal world.

The fact that value in the present research has only been given to the expression of feeling (primary process) and that lit tle account has been taken of ego controls, may have been one of the fundamental errors of the research. However, it should be pointed out that even when an attempt was made to classify the outcome of aggression expressed in the stories (Tell a Story test) there were no indications to support the views that resolving aggression positively (Jackson 1954) was related to creative output.

In spite of this fundamental criticism of the choice of measures of personality taken in this research, certain interesting findings and leads for the future did emerge and these are discussed here in the context of each of the measures taken.

Coping was introduced with the idea that the creative person must have access to and be able to acknowledge the feelings aroused by emotion-provoking situations. Thus creative children would give emotional responses to the implied conflict in the sentences of the Sentence Completion test and would not use the mechanisms of avoidance and repression.

The general findings indicated that coping was not related to creativity. Correlations were low and when they were significant they tended to be in the direction opposite to that hypothesised.

Particular difficulty occurred in making decisions as to what type of responses merited the most marks for "coping" - unbridled expression, as the existing theory suggested, or recognition of emotion but controlling it. Existing theory was followed and it is later suggested that this may have contributed to the paucity of results obtained from this test. A further difficulty in using data from this test arose out of the lack of inter-relationship between the coping responses themselves. It is suggested that this lack of relationship, indicating change in type of response, might be worth following up in future research.

Aggression was more easily assessed in that there was little argument as to which responses manifested the most amount of aggression. There were several findings indicative of a relationship between expression of aggression

and creativity. Interestingly, the relationships were in the opposite direction for the two sexes. Boys who expressed aggression tended to be creative whilst girls who expressed aggression tended not to be creative.

Inability to express aggression can be regarded as an expression of defensiveness and could account for the lower level of the creativity scores gained by the girls in the Uses test and Incomplete Designs test. The patterns of results were such, however, as to make this point impossible to prove. Only if consistent links occurred between creativity and aggression for boys and lack of aggression and creativity for girls would this point be proved. In the present research, whilst aggression predicted verbal creativity scores (Uses) for boys, lack of aggression failed to emerge as a predictor for girls. In the Incomplete Designs test lack of aggression was a predictor for girls but aggression did not emerge as a predictor for boys.

It might be argued that by taking hostility and aggression as the particular feelings to be investigated when the whole dimension of feelings is implied in the characteristic of "being in contact with feelings" we are at once introducing a sex bias. Boys are, after all, encouraged to be aggressive, competitive and independent whereas girls are encouraged to be conforming, submissive and unaggressive. Looking at the expression of feelings other than aggression, it could be argued that girls would be most "in contact with feelings" if expression of love, compassion, excitement or grief at the loss of a loved one, were measured. The suggestion is put forward here, however, that all these latter feelings are in fact viewed as positive and acceptable ones in our society whereas the negative feelings aroused by aggressive situations are far less acceptable. Girls are allowed to express the positive feelings aroused in ambivalent situations and are encouraged to repress the negative ones by conforming and submitting. Boys, it is suggested, are not actually encouraged to express the positive feelings but are expected to experience them because the mores of our society and the Christian ethic make much of always looking for the positive aspects of people and situations. They are, however, expected to express many negative feelings in that popular opinion has it that boys physiologically are "fit for the fight" and in addition need to be competitive in order to function as the bread winner of society. Boys therefore learn to live with conflicting emotions without undue anxiety; through habit they have a freer access to the negative feelings aroused in ambivalent situations. And

concluding the argument they should thus prove to be more creative.

The preceding paragraph has attempted to argue the case for measuring aggression (as opposed to other aspects of behaviour associated with expression of feelings) as an indicator of lack of defensiveness; in addition, reasons for the positive relationship between aggression and creativity and the negative relationship for girls have been put forward. The findings from the present research are not adequate to say that these arguments are supported. They are of sufficient interest, however, to state that expression of aggression does appear to be related to creativity and warrants further, more detailed investigation of this aspect of personality in relation to creativity.

The Questionnaire measures of "being in contact with and expressing feelings" were obtained from a first-person Questionnaire where the subjects were presented with emotional situations and were asked in which of three ways they would react to each. The three choices were

1. to deny all negative feelings;
2. to acknowledge and not act out the negative feelings aroused; and
3. to acknowledge and act out negative feelings, (given the highest marks).

As has been indicated in the discussion of results there were few significant results and those that did emerge were often conflicting. The Analyses of Variance, perhaps because of the necessity to collapse choices 1 and 2 (see Discussion of Results) did not produce meaningful results. Only one correlation proved to be significant, i.e. boys who acknowledged and expressed negative feelings gained the highest creativity scores (Tell a Story).

From the multiple regression equations, those boys who acknowledged repressed negative feelings gained high creativity scores on the Tell a Story test and low creativity scores on the Make a Picture test. It is difficult to find any reasons for the distribution and direction of these results and indeed there is a possibility that these findings may have arisen by chance.

In scoring this test highest marks were awarded to those responses indicative of the most "primary process". It may well be (in line with previous arguments) that by not taking into account ego controls one may have prejudiced the chances of producing more significant results. The most well adapted mode of responses might well be considered to be those which acknowledge negative feelings but do not act them out.

Recall of emotional material proved to be an unsatisfactory test. It is well known that remembering reflects intelligence and is often used in cognitive tests (i.e. the W.I.S.C.) as a subtest contributing to an intelligence score. Recall proved to be related to intelligence on this occasion also.

In designing the test, it was hoped that recall would reflect the ability to retain in memory unpleasant experiences. In retrospect, it seems that recall was requested too soon after presentation of the emotionally stimulating material for the defence mechanisms associated with repression and forgetting to get underway. If the test were to be used again it would seem that recall should be requested at least 24 hours after the initial presentation.

Sex and class differences in "openness to experience" were few. Perhaps this is not surprising in view of the lack of relationship between any of the measures of creativity and social class and also the general lack of relationship between and within the "openness" measures themselves.

Two social class effects occurred out of a possible 15.

1. Middle class children in their response to one item of the Questionnaire were more likely to acknowledge and express their negative feelings than working class children.

2. Working class children expressed more aggression in their stories (Tell a Story) than middle class children.

These two findings are at least in line with, and can be interpreted in the light of, our knowledge of social class differences in child rearing. (See Review). We are told (Bernstein et al) that parents of middle class children are more tolerant of their children's expression of ambivalence even if it is addressed towards themselves. Further, middle class children would be more used to talking about and acknowledging abstract ideas which in the case of the Questionnaire are "feelings". Working class children are subjected to harsher and more punitive handling and are not allowed to express their ambivalent feelings aroused by it. Overt aggression is more common in working class than middle class behaviour, and children would be familiar with it. Thus the children in each class reflected their normal environmental experiences in their responses.

There was only one significant sex difference in the measures of "openness".

This was in response to the Questionnaire - girls were more prepared than boys to acknowledge and express negative feelings. No reason for this result is evident.

In general, then, the results obtained from these investigations provided very little evidence to support the view that there was a strong or even a consistent relationship between "openness to experience" and creativity. Nor were there obvious sex and social class differences in "openness".

However, it is true to say that some of the aspects measured proved more useful than intelligence test scores in statistical predictions of some creativity test scores.

Despite the lack of any direct relationship of sex to "openness to experience", the results obtained from the multiple regression analyses do indicate that several of the measures of it did prove to be predictors of creativity and that these predictors were different for the two sexes. A detailed discussion of these findings will occur in Chapter 5 (on the results obtained from the multiple regression analyses).

TABLE 10 (i) & (ii) INTERCORRELATIONS OF PERSONALITY CORRELATES

(i) Boys:

		S1 (S.C.T coping)	S2 (S.C.T coping)	S3 (S.C.T coping)	S4 (S.C.T coping)	S5 (S.C.T coping)	S1 (S.C.T agg)	S4 (S.C.T agg)	S5 (S.C.T agg)	Agg.	Q1	Q2	Q3	Q4	R1	R2	R3
Coping	S1		19	09	22	36*	85	23	13	13	34	22	29	-07	04	-04	-13
	S2			22	11	41**	20	08	47	-11	06	27	00	09	08	-21	-19
	S3				16	14	05	04	01	42*	-07	-17	19	10	15	10	-16
	S4					03	07	77***	03	18	-06	00	20	-05	34	27	-07
	S5						16	00	70***	12	22	06	00	-08	-02	-05	-04
Aggr.	S1							10	19	02	-04	26	27	-02	14	-16	-12
	S4								04	39*	-03	-07	30	08	33	37*	-02
	S5									-02	-01	03	00	-07	14	-10	-12
Agg.											09	-02	00	-11	06	27	26
Quest.	Q1											-03	13	-47*	-25	-36*	-09
	Q2												23	40*	-04	-13	15
	Q3													-20	08	00	17
	Q4														17	08	-10
Recall	R1															62***	49**
	R2																59***
	R3																

(ii) Girls:

		S1 (S.C.T coping)	S2 (S.C.T coping)	S3 (S.C.T coping)	S4 (S.C.T coping)	S5 (S.C.T coping)	S1 (S.C.T agg)	S4 (S.C.T agg)	S5 (S.C.T agg)	Agg.	Q1	Q2	Q3	Q4	R1	R2	R3
Coping	S1		04	02	25	23	91***	15	37	27	19	-29	-02	12	-09	-01	-24
	S2			10	01	17	02	05	22	-01	-10	-27	02	03	09	40*	-03
	S3				22	34*	12	11	29*	15	33	08	-05	22	11	07	49
	S4					13	19	71	02	24	08	-16	-26	-43*	19	13	31
	S5						23	04	66***	08	18	-04	05	24	-09	02	-06
Aggr.	S1							12	39*	17	02	-37	-02	11	-01	07	22
	S4								15	35*	-13	33	01	-40*	03	31	28
	S5									13	-25	-07	20	-04	21	-31	-10
Agg.											-28	19	03	-24	22	-20	23
Quest.	Q1											04	20	10	-39	-30	-24
	Q2												31	-06	-49*	11	06
	Q3													28	-10	02	-26
	Q4														-51*	-36	-58*
Recall	R1															38	41*
	R2																12
	R3																

S = Sentence (Sentence Completion Test).

Q = Questionnaire.

R = Recall.

Agg. = Aggression (Tell a Story).

TABLE 11 CORRELATIONS - INTELLIGENCE, SOCIAL CLASS, CREATIVITY MEASURES with MEASURES of PERSONALITY

BOYS:

		V I.Q.	NV I.Q.	S.C.	V Cr.	NV Cr.I	NV Cr.II	Cr. TaS.	Cr. Pic.
S.C.T. Coping	S.1	-16	02	07	25	14	02	-15	31
	S.2	-14	-21	03	-16	-18	-02	-20	09
	S.3	-05	-19	10	-09	-23	-11	-45**	-13
	S.4	.16	00	02	26	27	01	-16	33
	S.5	-30	-32*	08	00	12	07	-35*	-30
S.C.T. Aggr.	S.1	-15	-10	-19	27	18	00	-09	36*
	S.4	28	19	06	19	29	04	-06	18
	S.5	-26	-35*	16	-24	25	03	-28	-20
Tell a Story Aggr.		24	26	14	34*	15	30	12	09
Quest.	Q.1	-42*	02	29	-20	-10	-17	-23	-01
	Q.2	-22	08	15	07	-24	15	39*	-09
	Q.3	-30	-30	00	-10	-16	-27	00	-31
	Q.4	00	09	-36*	-02	-14	-06	10	-30
Recall	R.1	28	16	-12	30	18	20	06	21
	R.2	55**	22	-03	18	04	27	19	16
	R.3	30	40*	11	05	-13	38*	11	17

No. of subjects in  = 35

No. of subjects not in " = 27

* = p = .05
** = p = .01
*** = p = .001

Sentence Key:

S.1 Father says I must do my homework and I say.....

S.2 I want to go out to play and mother says.....

S.3 If I got a bad report from school.....

S.4 My sister and I had a quarrel.....

S.5 My father says I must go to bed and I say.....

TABLE 12 CORRELATIONS - INTELLIGENCE, SOCIAL CLASS, CREATIVITY MEASURES with MEASURES of PERSONALITY

GIRLS:

		V I.Q.	NV I.Q.	S.C.	V Cr.	NV Cr.I	NV Cr.II	Cr. TaS	Cr. Pic.
S.C.T. Coping	S.1	-01	-01	11	.02	08	-13	11	-14
	S.2	15	49***	11	-07	14	10	07	-20
	S.3	-20	-17	17	17	21	09	02	19
	S.4	-03	-02	13	-03	05	-35*	03	-17
	S.5	-10	-08	15	-21	-08	-07	13	11
S.C.T. Aggr.	S.1	03	-06	07	14	18	-05	-03	-13
	S.4	-04	-09	10	-16	02	-49***	12	02
	S.5	-08	06	05	-10	05	03	-22	-22
Tell a Story Aggr.		04	-12		03	08	-26	-01	-17
Quest.	Q.1	07	-27	-19	-25	16	-09	-28	22
	Q.2	12	-21	29	30	00	30	-07	-26
	Q.3	22	05	-20	-06	14	06	09	-01
	Q.4	14	18	-26	-13	-09	08	-20	-01
Recall	R.1	-02	16	-08	15	16	-10	27	15
	R.2	10	27	09	33	05	04	13	-11
	R.3	-33	25	24	11	17	15	36	34

No. of subjects in  = 44

No. of subjects not in " = 22

* = p = .05
** = p = .01
*** = p = .001

TABLE 13 (i) and (ii) MEANS and SIGNIFICANT RESULTS of ANALYSES OF VARIANCE
(Coping Response x Sex x Class) Creativity Scores in Cells.

	MEANS								Analyses of Variance Sig. p (R = response (High or Low)) (S = sex (C = class						
	Boys				Girls										
	ABC		DEF		ABC		DEF								
COPING	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo							
S 1, 4, 5	n=10	n=12	n= 8	n= 5	n= 5	n= 5	n=16	n=18	R	S	C	RxS	RxC	SxC	RxSxC
V Cr.	14.00	9.58	11.25	4.40	7.20	4.80	7.93	4.55	**	*					
NV Cr. I	4.30	3.08	4.00	2.80	6.20	3.40	3.12	3.27	*						
NV Cr. II	5.40	5.08	5.50	4.00	3.80	4.40	3.68	4.55							
Cr. TaS	3.20	3.20	2.50	3.75	3.20	2.80	3.00	3.00							
	n= 7	n= 9	n= 7	n= 4	n= 3	n= 1	n= 9	n= 9							
Cr. Pic.	1.86	1.88	1.71	1.26	2.00	1.00	1.78	2.11							
COPING															
S 2	n=13	n= 9	n= 6	n= 7	n= 5	n= 5	n=14	n=20							
V Cr.	10.92	12.55	8.50	8.71	6.80	5.20	4.57	7.25		*					
NV Cr.I	3.07	4.44	4.00	3.14	5.00	4.60	3.35	3.10							
NV Cr.II	5.38	5.00	4.33	5.42	4.80	3.40	4.09	4.20							
Cr. TaS	3.07	3.33	2.83	3.42	3.20	2.80	2.85	3.15							
	n= 9	n= 7	n= 4	n= 7	n= 2	n=2	n= 6	n=12							
Cr. Pic.	1.89	1.86	2.00	1.29	2.00	1.50	1.33	1.83							

For details, see Table A 13 (Appendix)

TABLE 13 (i) and (ii) MEANS and SIGNIFICANT RESULTS of ANALYSES OF VARIANCE (Coping Response x Sex x Class).
(Creativity Scores in Cells)

TABLE 13(iii) MEANS and SIGNIFICANT RESULTS of ANALYSES OF VARIANCE (Coping Response x Sex x Class) Creativity Scores in Cells.

	MEANS								Analyses of Variance Sig. p (R = response (High or Low)) (S = sex) (C = class)						
	Boys				Girls										
	ABC		DEF		ABC		DEF								
COPING S.3	Hi n=11	Lo n=11	Hi n= 6	Lo n= 7	Hi n= 4	Lo n= 6	Hi n=19	Lo n=15	R	S	C	RxS	RxC	SxC	RxSxC
V Cr.	12.09	11.09	7.5	9.7	8.0	4.66	7.04	5.13		*					
NV Cr.I	2.63	4.63	2.5	4.42	5.75	4.16	3.47	2.86				*			
NV Cr.II	5.18	5.27	4.16	5.57	4.50	3.83	4.36	3.86							
Cr. TaS	2.72	3.63	2.83	3.42	3.5	2.66	2.84	3.26							
	n=8	n=8	n=5	n=6	n=2	n=2	n=10	n=8							
Cr. Pic	1.63	2.13	1.5	1.6	2.0	1.5	1.5	1.87							

For details, see Table A13 (Appendix).

Fig. 2

TABLE 13(iii) MEANS and SIGNIFICANT RESULTS of ANALYSES of VARIANCE (Coping Response x Sex x Class). (Creativity Scores in Cells)

TABLE 14 (i) and (ii) MEANS and SIGNIFICANT RESULTS of ANALYSES OF VARIANCE (Aggressive Response x Sex x Class) Creativity Scores in Cells.

	MEANS								Analyses of Variance Sig. p (R = response (High or Low)) (S = sex) (C = class)						
	Boys				Girls										
	ABC		DEF		ABC		DEF								
S.C.T.	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo							
S.1	n=10	n=12	n= 6	n= 7	n= 4	n= 6	n=18	n=16	R	S	C	RxS	RxC	SxC	RxSxC
V Cr.	14.6	9.08	9.66	7.71	7.70	5.33	5.88	6.43		*					
NV Cr.I	4.5	2.75	4.16	3.0	6.25	3.83	3.33	3.06	*						*
NV Cr. II	6.0	4.58	4.5	5.28	4.0	4.0	3.83	4.5							
Cr. TaS	3.6	3.09	2.33	3.85	3.0	3.0	2.94	3.12							
	n= 8	n= 8	n= 5	n= 6	n= 2	n= 2	n=11	n= 7							
Cr. Pic.	2.0	1.75	1.8	1.33	2.0	1.5	1.81	1.42							
S.C.T.															
S4	n= 9	n=13	n= 7	n= 6	n= 4	n= 6	n=18	n=16							
V Cr.	12.54	10.63	9.57	7.5	3.25	4.00	4.38	8.2		*					
NV Cr.I	4.00	3.27	4.28	2.66	4.25	5.16	3.27	3.12							
NV Cr.II	4.45	6.0	4.71	5.16	3.25	4.66	3.5	4.87	*	*					
Cr. TaS	3.19	3.27	3.66	3.00	4.00	2.66	2.88	3.18							
	n= 9	n= 7	n= 5	n= 6	n= 1	n= 3	n=10	n= 8							
Cr. Pic.	4.22	3.57	3.6	2.5	4.00	3.66	3.8	3.5							

For details, see Table A 14 (i) and (ii) (Appendix).

TABLE 14 (i) and (ii) MEANS and SIGNIFICANT RESULTS of ANALYSES of VARIANCE (Aggressive Response x Sex x Class). (Creativity Scores in Cells)

Fig. 3

TABLE 14(iii) MEANS and SIGNIFICANT RESULTS of ANALYSES OF VARIANCE (Aggressive Response x Sex x Class) Creativity Scores in Cells.

	MEANS								Analyses of Variance						
	Boys				Girls				Sig. p (R = response (High or Low)) (S = sex) (C = class)						
	ABC		DEF		ABC		DEF								
S.C.T.	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	R	S	C	RxS	RxC	SxC	RxSxC
S.5	n= 9	n=13	n= 8	n= 5	n= 3	n= 7	n=21	n=13							
V Cr.	11.33	12.53	7.42	10.0	5.66	6.85	5.33	7.46		*					
NV Cr.I	4.44	3.07	5.0	2.62	7.0	3.85	3.45	2.85	**					*	
NV Cr.II	6.0	44.69	5.13	4.6	4.67	3.86	4.00	4.38							
Cr. TaS	3.0	3.30	2.42	4.00	2.0	3.42	2.90	3.23	*						
	n= 6	n=10	n= 6	n= 5	n= 2	n= 2	n=12	n= 6							
Cr. Pic.	2.00	1.66	1.4	1.4	2.0	1.5	1.75	1.50							

Fig. 4

For details, see Table A 14 (iii) (Appendix).

TABLE 14(iii) MEANS and SIGNIFICANT RESULTS of ANALYSES of VARIANCE (Aggressive Response x Sex x Class). (Creativity Scores in Cells)

TABLE 15

MEANS and SIGNIFICANT RESULTS of ANALYSES OF VARIANCE
(Response (aggression - Tell a Story) x Sex x Class).
(Creativity Scores in Cells)

	MEANS								Analyses of Variance						
	Boys				Girls				Sig. p (R = response (High or Low)) (S = sex) (C = class)						
	ABC		DEF		ABC		DEF								
Tell a Story	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo							
Aggression	n=12	n=10	n= 8	n= 5	n= 4	n= 6	n=21	n=13	R	S	C	RxS	RxC	SxC	RxSxC
V Cr.	12.07	10.75	9.87	6.6	5.5	6.33	6.95	5.00		*					
NV Cr.I	3.66	3.60	3.75	3.2	3.00	4.66	3.60	2.62							
NV Cr.II	5.41	5.00	5.87	3.4	3.0	4.83	3.8	4.14				*			
Creativity of Story	2.83	3.5	3.37	2.8	2.75	3.16	2.90	3.23							
	n= 8	n= 8	n= 6	n= 5	n= 2	n= 2	n=12	n= 6							
Creativity of Picture	2.0	1.75	1.5	1.6	1.5	2.0	1.75	1.5							

Fig 5.

For details, see Table A 15 (Appendix).

TABLE 15 MEANS and SIGNIFICANT RESULTS of ANALYSES OF VARIANCE (Response (aggression - TaS) x Sex x Class) (Creativity Scores in the Cells)

TABLE 16

Results of the correlation analyses, multiple regression and analyses of variance: between the creativity measures and expressed aggression.

Aggression	V. Cr.	NV Cr. I	NV Cr. II	Cr. Story	Cr. Picture
Sentence 1		+ B (A) + G (A)			+ B (M.R.) + B (Cor.)
Sentence 4			- B (A) - G (A, Cor M.R.)		
Sentence 5		+ B (A) + G (A)		- B(A, M.R) - G (A)	
Aggression in Story	+ B (Cor.) + B (M.R.)		+ B (A) - G (A)	- G (M.R.)	

Code:

(Cor.) = correlation
(M.R.) = multiple regression
(A) = Analyses of Variance

B = boys
G = girls

TABLE 17 ANALYSES OF VARIANCE TO SEE IF CREATIVITY SCORES VARIED ACCORDING TO THE OUTCOME OF THE STORY.

Outcome of Story:	MEANS				Analyses of Variance
	No Outcome	Refute authority	Child told off/ Sent to bed	Positive Outcome	Sig. p
	n = 26	n = 8	n = 25	n = 20	
V Cr.	6.73	15.62	5.48	9.1	
NV Cr. I	3.11	5.00	3.72	3.4	
NV Cr. II	4.37	6.25	4.36	4.45	
Cr. TaS	3.30	3.72	2.6	3.15	
	n = 15	n = 8	n = 12	n = 14	
Cr. Pic.	3.73	3.37	3.16	4.00	

$F_{0.05}(3,75) = 2.72$

For details, see Table A 17 (Appendix).

TABLE 17 ANALYSES OF VARIANCE to see if CREATIVITY SCORES VARIED ACCORDING TO THE OUTCOME OF THE STORY. (TaS).

TABLE 18 (i) and (ii) MEANS and SIGNIFICANT RESULTS of ANALYSES OF VARIANCE (Response (Questionnaire) x Sex x Class) Creativity Scores in Cells.

	MEANS								Analyses of Variance Sig. p (R = response (High or Low)) (S = sex) (C = class)							
	Boys				Girls											
	ABC		DEF		ABC		DEF									
Quest.	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo								
Q.3	n= 2	n=14	n= 1	n=10	n= 2	n= 2	n= 5	n=13	R	S	C	RxS	RxC	SxC	RxSxC	
V Cr.	7.5	14.14	15.00	8.50	6.50	14.50	6.6	6.76								
NV Cr.I	6.0	3.78	6.0	3.4	6.5	8.0	4.0	3.0								
NV Cr.II	3.5	5.85	5.0	5.3	6.5	2.5	7.33	4.15				**				fig 6
Cr. TaS	3.0	3.35	3.0	3.0	3.5	2.0	3.6	2.61								
Cr. Pic	1.0	2.0	1.0	1.6	1.5	2.0	1.6	1.69								
Q.4	n= 6	n=10	n= 1	n=10	n= 2	n= 2	n= 3	n=15								
V Cr.	12.0	14.1	8.0	9.2	5.0	11.0	5.0	7.06	*	*	*					fig 7
NV Cr.I	3.0	4.7	1.0	3.9	8.0	6.5	2.0	3.53			*					
NV Cr.II	6.16	4.6	4.00	5.4	4.5	44.5	5.00	4.06								
Cr. TaS	3.0	3.5	6.0	2.7	2.0	3.5	3.66	2.73					**			fig 8
Cr. Pic.	1.66	2.0	1.0	1.6	2.0	1.5	1.69	1.60								

For details, see Table A 18 (Appendix).

TABLE 18 (i) and (ii) MEANS and SIGNIFICANT RESULTS of ANALYSES of VARIANCE (Response (Questionnaire) x Sex x Class) (Creativity Scores in the Cells)

TABLE 19

MEANS and SIGNIFICANT RESULTS of ANALYSES OF VARIANCE
(Response (Recall) x Sex x Class) Creativity Scores in the Cells.

	MEANS								Analyses of Variance						
	Boys				Girls				Sig. p (R = response (High or Low)) (S = sex) (C = class)						
	ABC		DEF		ABC		DEF								
Recall	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo							
R.1	n= 8	n= 6	n= 5	n= 6	n= 3	n= 1	n= 10	n= 8	R	S	C	RxS	RxC	SxC	RxSxC
V Cr.	18.0	8.62	6.60	11.60	8.66	6.00	7.00	6.37							
NV Cr.I	4.5	3.62	3.20	4.00	7.00	8.00	3.40	3.12			**			*	
NV Cr.II	7.12	4.00	4.20	6.16	3.33	8.00	4.00	4.5				*			**
Cr. TaS	3.37	3.25	3.00	3.00	3.00	2.00	3.10	2.62							
Cr. Pic	1.87	1.87	1.8	1.33	1.66	2.00	1.70	1.62							
R.2	n= 6	n=10	n= 3	n= 8	n= 1	n= 3	n= 6	n=12							
V Cr.	17.5	10.8	8.33	9.37	15.00	5.66	10.16	5.00							
NV Cr.I	5.0	3.5	1.66	4.37	8.00	7.00	3.83	3.00		*	**				
NV Cr.II	6.5	5.00	5.33	5.25	2.0	6.5	4.5	4.08							
Cr. TaS	3.5	3.2	3.66	2.75	5.0	2.0	3.0	2.83	*						
Cr. Pic.	2.16	1.7	1.33	1.62	2.00	1.66	1.5	1.75							
R.3	n=10	n= 6	n= 8	n= 3	n= 2	n= 2	n=14	n= 4							
V Cr.	13.4	13.16	10.0	6.66	10.5	5.5	7.35	4.5							
NV Cr.I	4.20	3.83	3.00	5.33	8.00	6.5	3.57	2.25			*			*	
NV Cr.II	6.2	4.5	5.87	3.66	6.00	3.00	4.07	4.75	*						
Cr. TaS	3.30	3.33	3.25	2.33	3.5	2.0	2.78	3.25							
Cr. Pic.	2.0	1.66	1.62	1.66	2.00	1.50	1.78	1.25							

For details, see Table A 19 (Appendix).

TABLE 19

MEANS and SIGNIFICANT RESULTS of ANALYSES of VARIANCE (Response (Recall) x Sex x Class. (Creativity Scores in Cells)

fig. 9.

TABLE 20 MEANS and SIGNIFICANT RESULTS of ANALYSES of VARIANCE (Sex x Class)

(Personality Measures in the Cells)

		Boys		Girls		Analyses of Variance		
		ABC	DEF	ABC	DEF	Sex	Class	SxC
		n=22	n=13	n=10	n=34			
S.C.T. (coping)	S1, 4, 5	6.50	6.50	6.4	6.1			
	S2	2.32	2.15	2.20	2.44			
	S3	2.36	2.31	2.50	2.21			
S.C.T. (aggr.)	S1	2.32	2.00	2.10	2.35			
	S4	2.45	2.61	2.30	2.44			
	S5	2.27	2.46	2.30	2.47			
Story (aggr.)		3.45	3.84	3.30	3.47		*	
Band Width		30.27	25.38	23.01	27.29			** fig
Tol. of Ambig.		5.13	5.46	5.10	5.11			
		n=16	n=11	n= 4	n=18			
Quest.	Q1	2.69	2.91	3.00	2.84			
	Q2	1.88	2.09	1.75	2.11			
	Q3	2.00	2.00	2.50	2.22	*		
	Q4	2.13	1.55	2.00	1.44		*	
Recall	RI	1.50	1.36	1.75	1.63			
	RII	.88	.82	1.00	1.17			
	RIII	.63	.73	.50	.78			

For full details, see Table A20 (Appendix).

Fig. 2. Sex X Coping (S 3 SCT) interaction

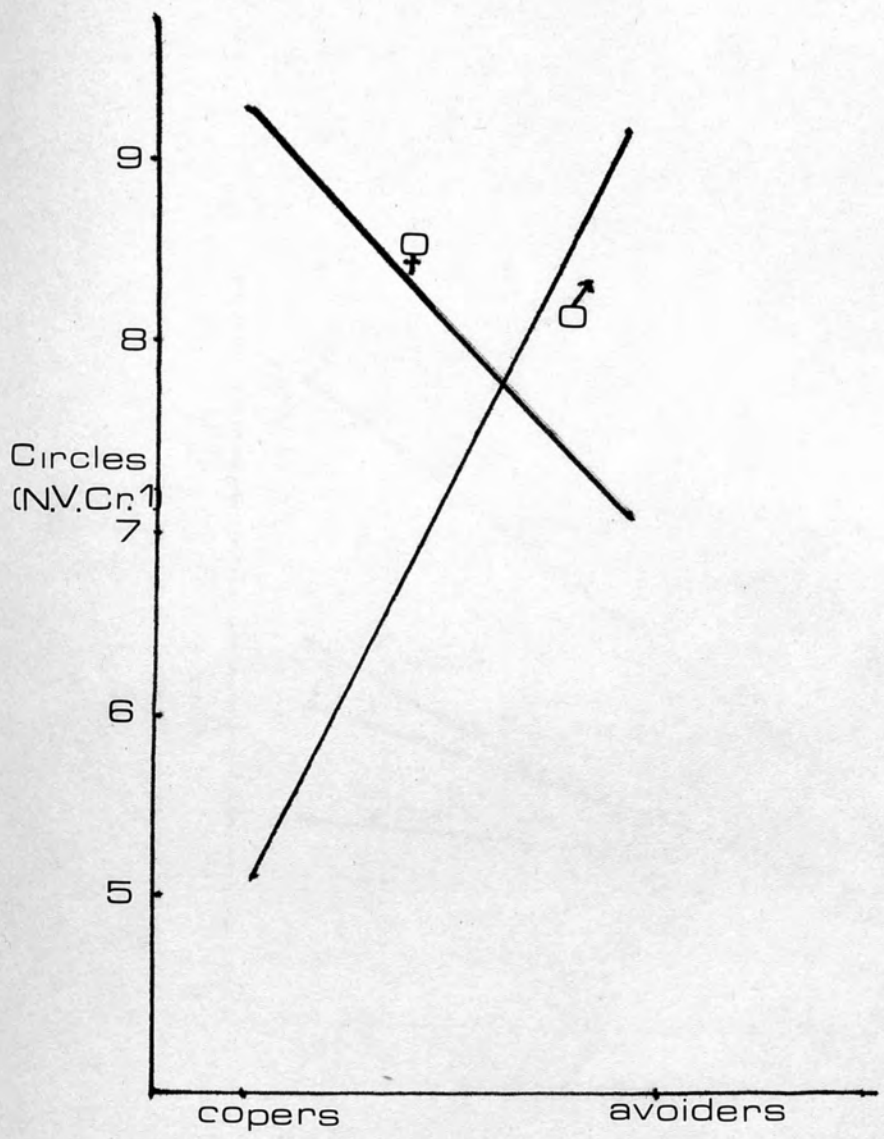


Fig. 3. Mean Circles Scores for High and Low Aggression (S1.S.C.T.)

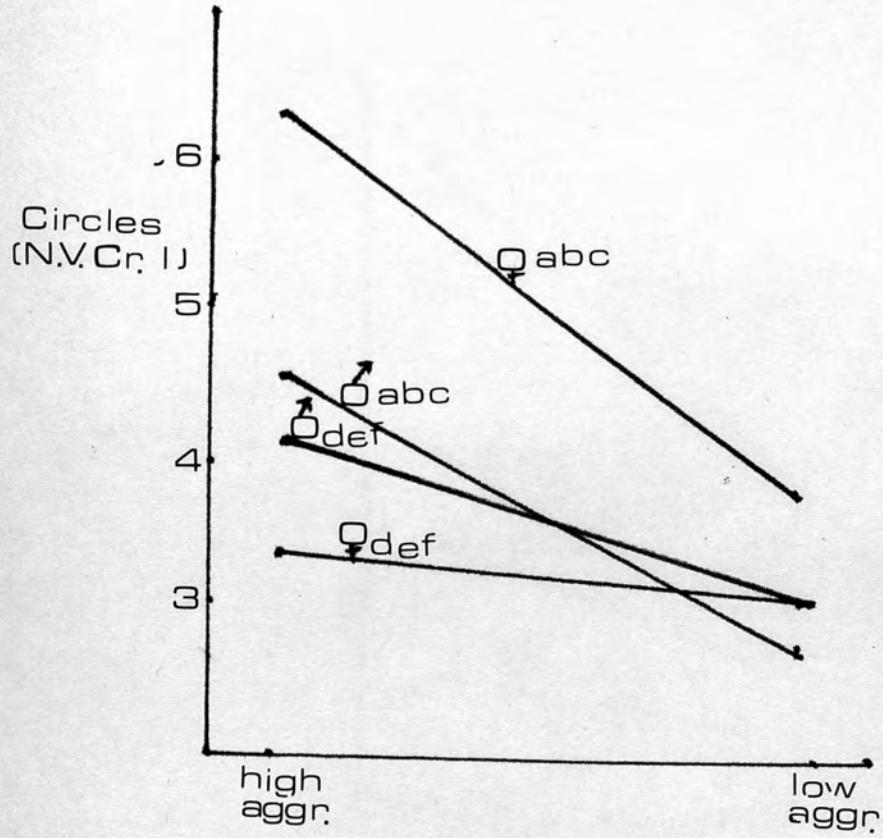


Fig. 4. Mean Circles Scores for High and Low Aggression -S.5 S.C.T.

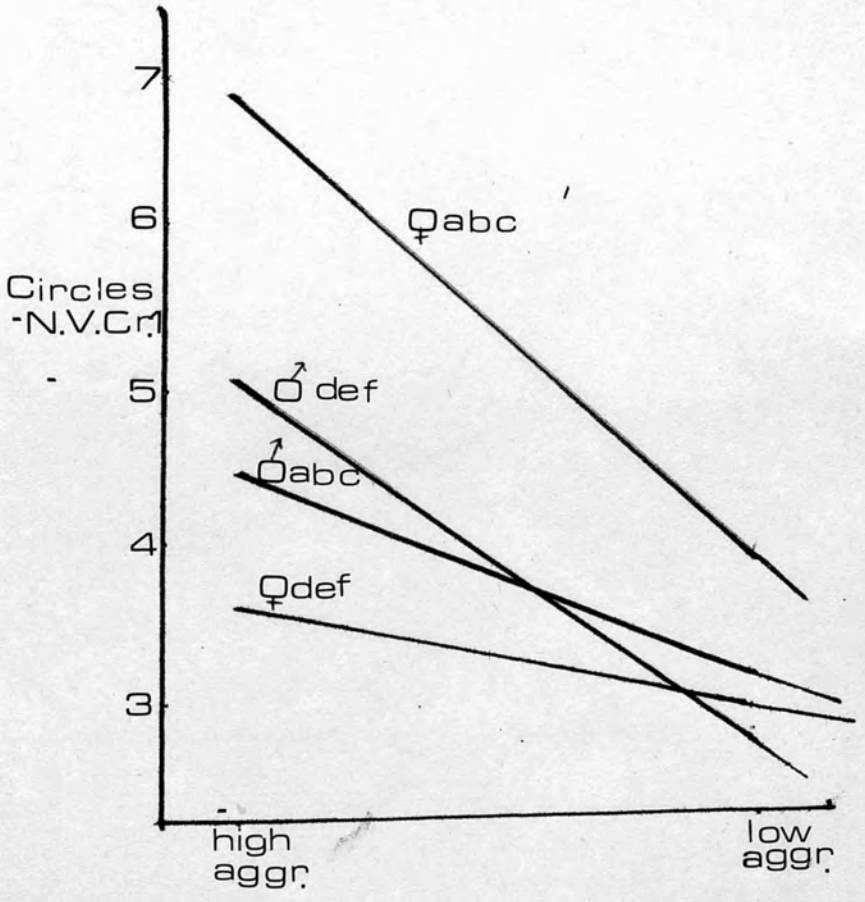


Fig. 5. Aggression / sex interaction
(Tell a story)

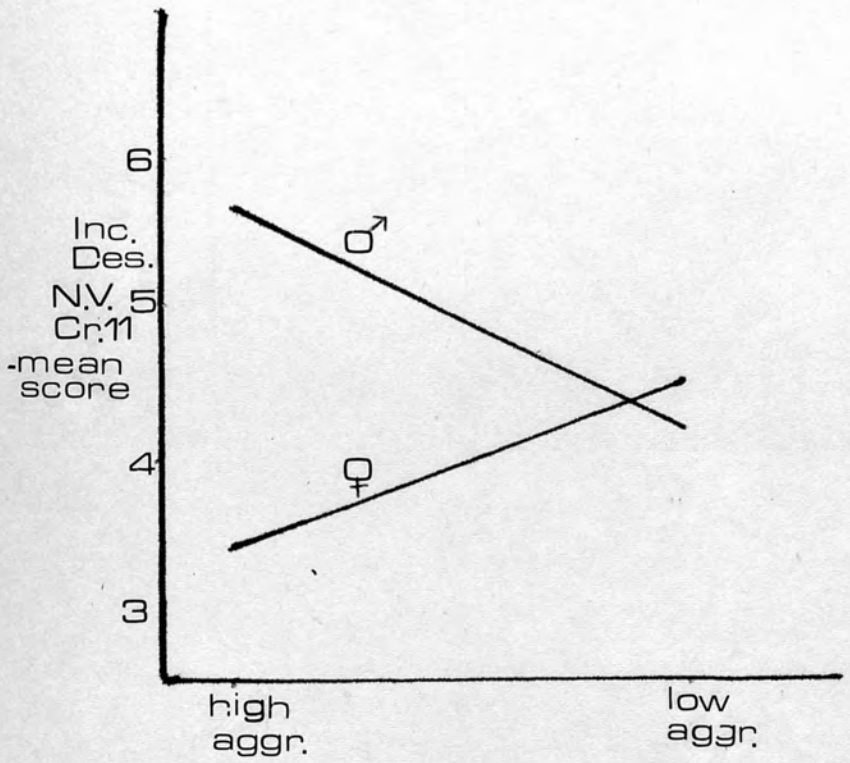


Fig 6 Contact with feelings (Q 3) / Sex interaction (Qtre)

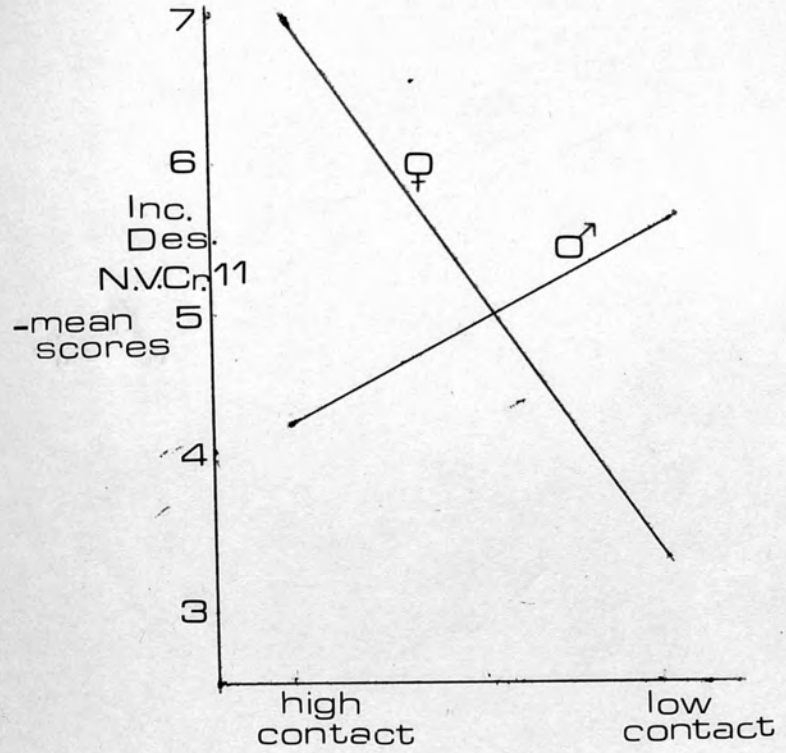


Fig 7 Significant findings from Anal. of Var. of Uses scores. (Sex, Class & Contact with feelings) interaction. (Q.4.Qtre.)

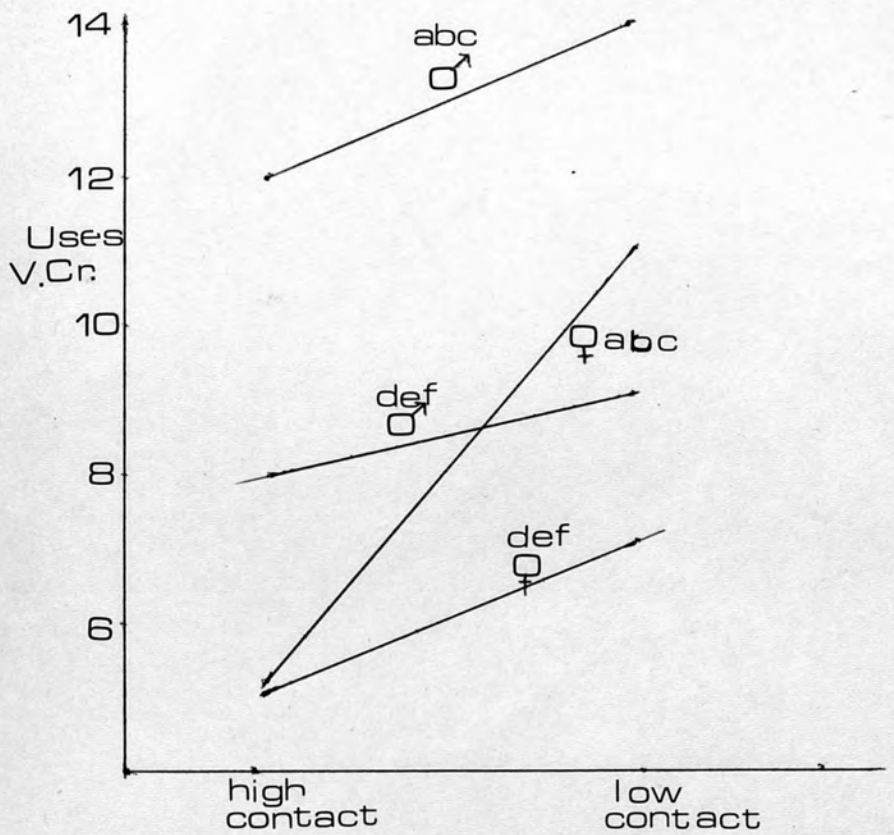


Fig 8 Contact with feelings X Class interaction Q.4. Qtre.

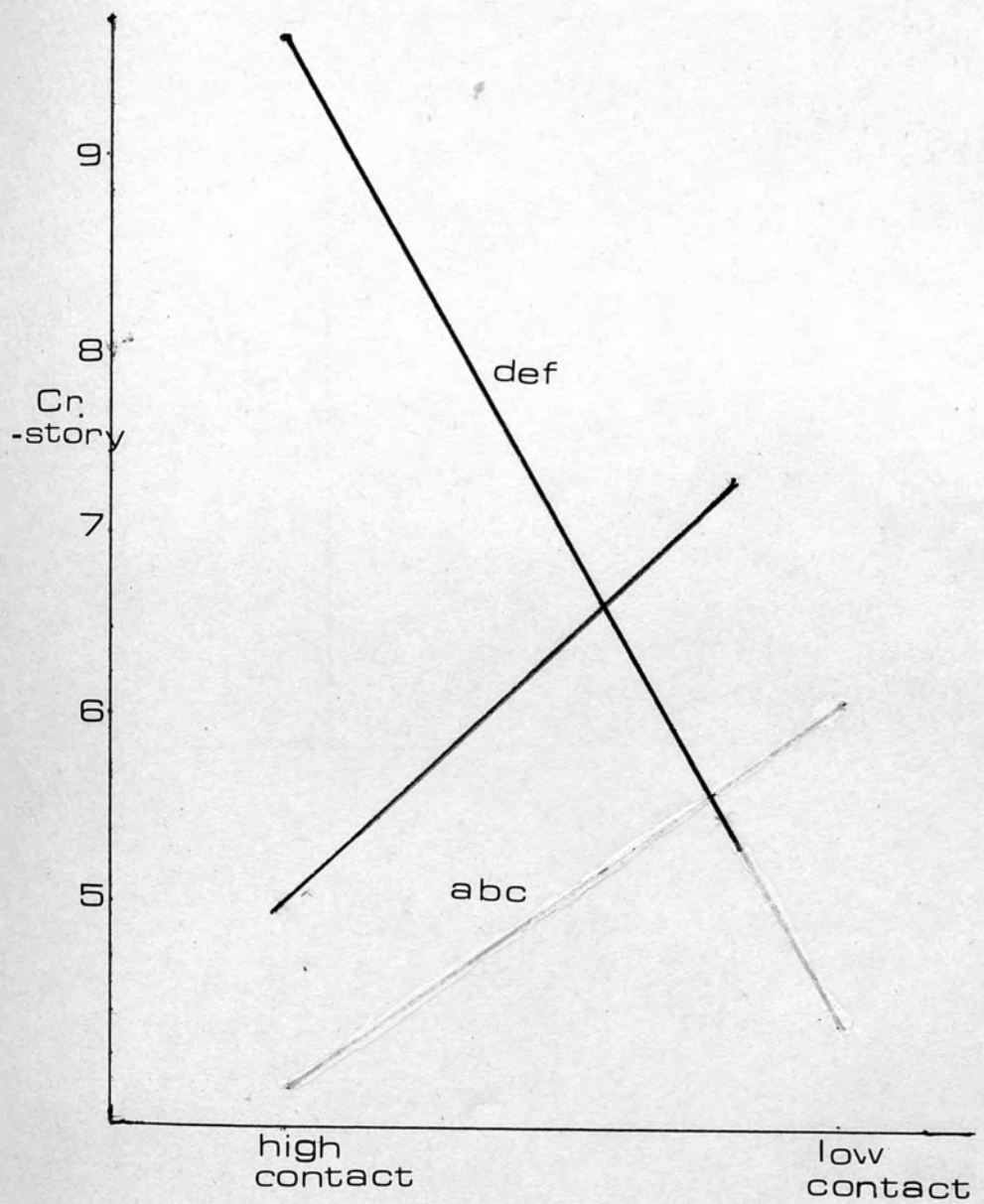
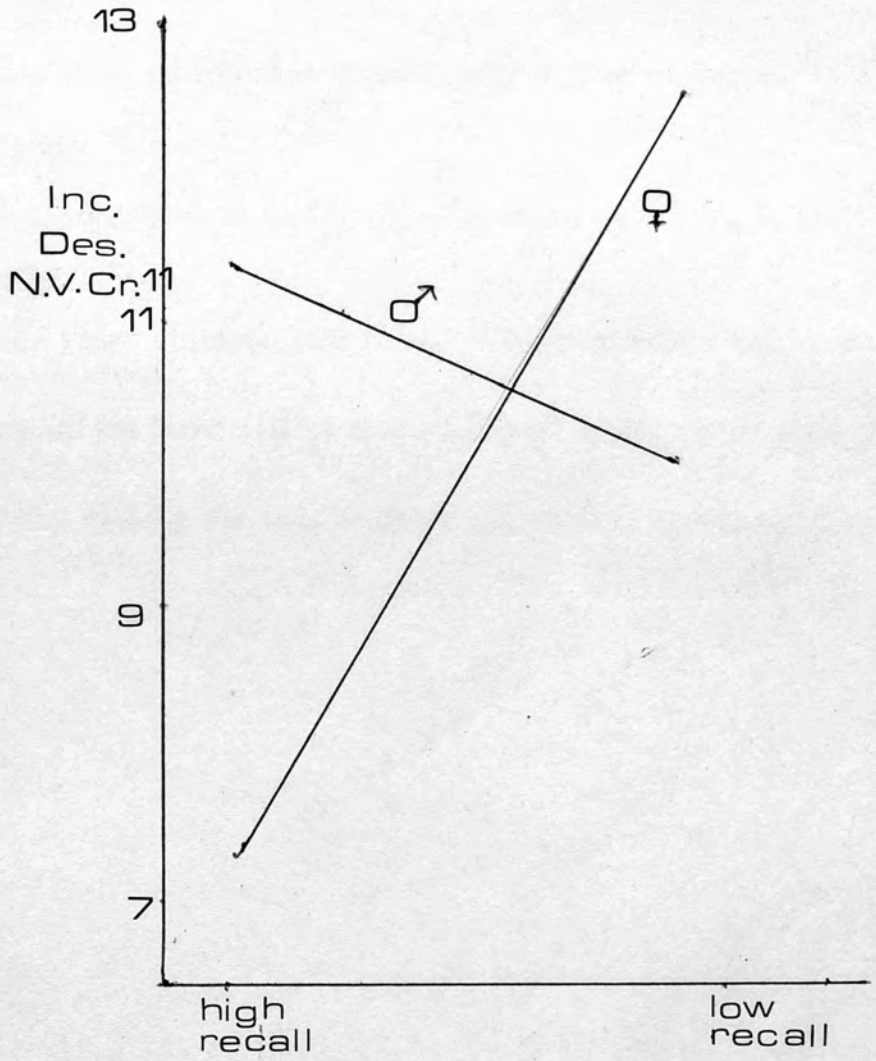


Fig 9 Sex X Recall (R1) interaction.



Chapter 3. Creativity and tolerance of ambiguity and band width.

It was argued in the Review of the Literature that it is necessary for the creative problem solver to tolerate the ambiguity of the problem solving situation. He has to combine, reshuffle and relate existing ideas and must tolerate a complex, indefinite and conflicting situation.

In addition, it was argued that those people who were willing to entertain the possibility that highly deviant instances deserved category membership might well turn out to be the most capable of conceiving of manifold and unusual possibilities in connection with creativity tasks.

The hypotheses to be discussed are:

Hypothesis 5:

Children who are tolerant of ambiguity will be creative.

Hypothesis 6:

A child's tolerance of ambiguity will differ according to his/her social class and sex.

- Middle class children will be more tolerant of ambiguity than working class children.
- Middle class boys will be more tolerant of ambiguity than middle class girls.
- Working class girls will be more tolerant of ambiguity than working class boys.

Hypothesis 7:

Children who are accepting of broad category boundaries will be creative.

Hypothesis 8:

A child's acceptance of broad category boundaries will differ according to his/her social class and sex.

- Middle class children will have broader category boundaries than working class children.
- Middle class boys will have broader category boundaries than middle class girls.
- Working class girls will have broader category boundaries than working class boys.

1. Hypothesis 5: Tolerance of Ambiguity and Creativity.

(i) The measure of tolerance of ambiguity was obtained from a Frenkel-Brunswik type test, where the raw score was the number of the picture at which the subject gave up perceiving the initial object. The quicker the initial object was relinquished then the more tolerant of ambiguity was the subject (See Scoring). For Hypothesis 5 to be accepted, therefore, negative correlations between tolerance of ambiguity and the creativity measures would be expected.

(ii) Correlations are set out in Tables 21 (i) and (ii). There were no significant correlations between tolerance of ambiguity and the creativity measures for boys.

Only one significant correlation emerged for girls - between tolerance of ambiguity and the creativity of the picture. This was a positive correlation and as such indicated that intolerance of ambiguity was related to high creativity on this test.

This finding emerged again in the multiple regression equation where intolerance of ambiguity was the only predictor of the creativity of the picture. It was further found to be one of the 5 predictors of the creativity level of the Story test. The Analyses of Variance (Tolerance x Sex x Class) carried out on the creativity scores yielded no significant results (see Table 22).

(iii) Hypothesis 5 is thus rejected. There appears to be no relationship between creativity and tolerance of ambiguity for boys. There is a relationship in the opposite direction to that hypothesised for girls with regard to the freer creativity tests (Tell a Story and Picture tests). Those girls who were intolerant of ambiguity told the most creative stories and produced the most creative pictures.

2. Hypothesis 7: Band Width and Creativity.

(i) The measure of the ability to accept broad category boundaries was taken from scores on the Pettigrew Band Width Test where high scores represented the acceptance of broad category boundaries and low scores, narrow ones.

(ii) Correlations between band width scores and creativity scores are set out in Tables 21 (i) and (ii).

Band width correlated significantly with creativity as measured by the Uses test and the Circles test for boys. For girls, Band Width correlated with scores on the Uses test. The Analyses of Variance (Band Width x Sex x Class) produced a significant result for verbal creativity scores only (see Table 23). There was a social class/ Band Width interaction (Figure 10).

Overall, those children who gained high Band Width scores gained high scores on the Uses Test. When the mean scores of the sex and social class groups were plotted on the graph it was seen that this relationship held true for all but the working class girls.

The interaction effect indicated that the relationship between band width and creativity is most evident for the middle class children; there was little difference between mean scoress on the Uses test for broad and narrow categorisers from the working class children.

Band width was found to be a significant predictor in the multiple regression analyses of verbal creativity scores for both sexes - it emerged with aggression for boys and with intelligence for girls. It was thought that the relationship between Band Width and Verbal Creativity scores might be due to the intelligence factors operating (verbal creativity and intelligence being correlated to a sizeable degree), but when intelligence was partialled out of the correlations the remaining correlations remained significant for both boys and girls ($r = .46$ and .38, respectively).

(iii) Hypothesis 5 is accepted with regard to Verbal Creativity scores only. Children who are accepting of broad category boundaries will gain high scores on the verbal creativity test (Uses).

3. Hypothesis 6 and Hypothesis 8: The Effects of Social Class and Sex on Tolerance of Ambiguity and Breadth of Categorising.

(i) The correlations between social class and the measures of tolerance of ambiguity and breadth of categorising are set out in Tables 21(i) and (ii).

There was no relationship between social class and tolerance of ambiguity for either sex. There was, however, a significant relationship between social class and breadth of categorising. Those boys who gained high Band Width scores tended to be middle class and those girls gaining high scores tended to be working class.

This finding was verified in the Analyses of Variance where there was a significant interaction effect (Sex x Class). (Table 20 Page 164 and Figure 11 .)

(ii) Hypothesis 6 is thus rejected. A child's ability to tolerate ambiguity does not vary according to his social class or sex.

(iii) Hypothesis 8 is partially accepted. A child's breadth of categorising varies according to his social class and sex.
Middle class children do not accept broader category boundaries than working class children.
An interaction effect indicated that:-
However, as predicted, middle class boys accept broader category boundaries than working class boys, and working class girls accept broader category boundaries than middle class girls. Further middle class boys were found to do substantially better in the boundary test than middle class girls

4. General Discussion:

Many of the concepts used by Frenkel-Brunswik (1949a & b) in defining the attribute termed "tolerance of ambiguity" have also been used in defining and clarifying what we mean by "being open to experience" and "being in contact with feelings". Frenkel-Brunswik argued that the origin of the ability to be tolerant of ambiguity arose from the attempts to master aggression towards parents experienced as threatening and too powerful. Further, she said that those children experiencing the most aggressive feelings would have been the victims of harsh, traumatic and overwhelming parental discipline. Those children experiencing only mild discipline, in addition to feeling less aggressive, would, as well, have been allowed to express their ambivalent feelings which were aroused. They would not be made to feel too anxious when experiencing ambivalent feelings towards their parents.

In testing for "tolerance of ambiguity", Frenkel-Brunswik made the assumption that those people who are intolerant of conflicting emotions and value judgements would also be incapable of seeing things in two or more different ways, i.e. the intolerance of ambiguity would manifest itself in the perceptual field and indeed in most areas of functioning. Frenkel-Brunswik therefore tested for this ability by using perceptual stimuli and her methods were adopted in the present research.

The results obtained did not verify the hypotheses put forward. For boys there was no apparent relationship between creativity and tolerance of ambiguity. For girls, two results occurred in the direction opposite to that hypothesised.

The two variables, sex and class, failed to show any relation to the subjects' tolerance of ambiguity. It was only in conjunction with creativity that there was a sex difference - girls' creativity scores on the freer tests being predicted by intolerance of ambiguity, whilst boys' scores were not.

Wallach and Kogan's (1965) use of Pettegrew's Band Width Test was based on the argument that willingness to consider improbabilities might be a sign of creativity.

The major difference between conceptual band width and creativity constructs concerns the issue of who shall impose category limits or boundaries. For band width, the limits are specified by the experimenter and the subject must decide which is the most appropriate. The more extreme the limits selected relative to a typical instance or central tendency value the larger will be the number of possibilities accommodated by the category. Creativity tasks, on the other hand, offer the subjects virtually unlimited freedom in the imposition of category boundaries. The subject can try out numerous possibilities and is restrained only be internal criteria, i.e. what is inappropriate or bizarre.

Wallach and Kogan's general finding was that those children showing broader band width behaviour gained the highest creativity indices on their composite measure of creativity. The results were clearest for the girls. However, the boys gained higher band width scores than girls overall.

In the present research it was possible to look at the relationship of band width to the individual creativity test scores. The following findings emerged. Firstly, band width scores were significantly related to scores on the Uses test only and this result obtained for both sexes. The sizeable and positive, though not significant, correlations between band width scores and the other creativity tests for boys suggests that the parallels drawn between categorising and creativity are justified and that those boys who are open-minded enough to accept broad band widths will in fact be generally creative. For girls, band width did not relate to the scores on

the other creativity tests, and this substantiated the findings discussed in Chapter 1 that girls do not show the generality among creativity scores that boys show. Those girls who were creative on the Uses test were not seen to be creative in any more general sense.

The second finding of interest was the interaction effect of social class and breadth of categorising. Boys who accepted broad category boundaries tended to be middle class whilst the girls accepting broad category boundaries tended to be working class. Moreover, middle class boys obtained much higher scores than middle class girls, and working class girls somewhat higher scores than working class boys. This is reflected in the distribution of subjects' scores on Analyses of Variance of the Band Width Test. 77% of the middle class boys (17 out of 22) fell in the high band width category (mean verbal creativity score 13.47), whereas only 33% (3 out of 10) of the middle class girls fell into this group (mean verbal creativity score 10.66).

It is suggested here that two factors operate in a subject's decision to choose broad or narrow categories; firstly, the subject's capacity to indulge in open-mindedness and, secondly, the breadth of his real life experiences.

Evidence has been offered in the Review of the Literature that middle class boys are encouraged to experiment and to be independent to a greater degree than middle class girls. Girls, particularly middle class girls, are subjected to expectations that they should conform and be submissive. They are treated more coercively by their mothers and receive less encouragement to investigate and experiment than do boys.

It is also to be expected that middle class children would have far broader experiences on which to draw in making categorising decisions (as in the Band Width Test) than working class children. They would have travelled more, communicated more, have read more by virtue of their higher intelligence and greater parental encouragement, they would have a broader knowledge of possibilities and would have been encouraged to investigate for themselves where boundaries in life lay.

These two factors allow us to offer some explanations for the discrepancy in numbers of boys and girls with high band width scores (Sex x Class x Band Width) seen in Table 23 where verbal creativity scores were being analysed.

Table 20 shows that middle class boys gained the highest mean band width scores as would be postulated from their broader life experiences and general encouragement to be exploratory and open-minded, but that middle class girls gained the lowest scores (in spite of their wider life experience) - perhaps because of the repressive socialisation pressures brought to bear on them.

The working class children of both sex had medium scores as might be postulated from the opposing factors of lesser life experience and less restrictive socialisation pressures (in comparison with the middle class girls).

Those middle class children with broad band width scores (Table 23) gained the highest verbal creativity scores. Boys, however, gained the highest scores perhaps because they were less subject to socialising pressures than were the girls. The Middle class boys and girls with low band width scores had low verbal creativity scores. Despite their presumably wide life experience, it is suggested that they have been socialised to the extent that they conform and feel insecure in broad categorisations. They are thus likely to be defensive. In the working class children, there was less difference in verbal creativity scores between those children with high and low band width scores. Girls who had broad band width scores had slightly higher verbal creativity scores than their peers with low band width scores, however.

The relationships just described are complex, but undoubtedly do parallel those drawn by Wallach and Kogan (1966) between the preparedness to entertain the possibility of highly deviant instances having category membership and the ability to do well in creativity tasks.

TABLE 21 CORRELATIONS between INTELLIGENCE, SOCIAL CLASS and CREATIVITY MEASURES with BAND WIDTH and TOLERANCE OF AMBIGUITY.

(i) BOYS:	V I.Q.	NV I.Q.	S.C.	V Cr.	NV Cr. I	NV Cr. II	Cr.St.	Cr. Pic.
Band Width	28(30)	-01(-03)	-44*	50**(52)	31*(33)	25(15)	16(23)	(33)
Tol. of Amb.	16(09)	12(06)	09	-18(-24)	17(25)	04(03)	08(00)	(19)

(ii) GIRLS:	V I.Q.	NV I.Q.	S.C.	V Cr.	NV Cr. I	NV Cr. II	Cr.St.	Cr. Pic.
Band Width	02(11)	-07(.16)	+28*(+16)	37**(33)	-12(-20)	09(20)	09(-02)	(-31)
Tol. of Amb.	-03(-21)	-07(-17)	01(0)	-14(-27)	-02(-02)	01(-13)	09(.24)	(45*)

Nos. not in brackets = correlations for whole sample (35 boys, 44 girls).

Nos. in brackets = correlations for 27 boys, 22 girls (Parts I, II and III).

TABLE 22 MEANS and SIGNIFICANT RESULTS of ANALYSES OF VARIANCE
(Tolerance of Ambiguity x Sex x Class) Creativity Scores in Cells.

	MEANS												Analyses of Variance Sig. p (R = response (High or Low)) (S = sex) (C = class)						
	Boys						Girls												
	ABC			DEF			ABC			DEF									
	Hi	Med	Lo	Hi	Med	Lo	Hi	Med	Lo	Hi	Med	Lo							
	n=7	n=6	n=9	n=6	n=3	n=4	n=4	n=2	n=4	n=9	n=18	n=8	R	S	C	RxS	RxC	SxC	RxSxC
V Cr.	8.7	11.5	13.88	10.6	7.33	7.5	5.75	2.5	8.0	3.75	7.27	5.6		*	*				
NV Cr.I	3.71	4.16	3.22	4.5	3.0	2.5	5.75	1.0	5.75	2.77	3.11	13.05							
NV Cr.II	5.28	4.66	5.55	5.16	5.33	4.25	3.75	4.0	4.5	3.66	4.44	3.5							
Cr. TaS	3.14	3.66	2.88	3.83	3.00	2.75	2.75	2.5	3.5	3.25	2.94	3.00							
	ABC			DEF			ABC			DEF									
	Hi		Lo	Hi		Lo	Hi		Lo	Hi		Lo							
	n= 4		n=12	n= 5		n= 6	n= 2		n= 2	n= 6		n=12							
Cr. Pic.	3.75		3.50	3.66		4.00	3.40		3.66	2.66		3.66							

For details, see Table A22 (Appendix).

TABLE 22 MEANS and SIGNIFICANT RESULTS of ANALYSES of VARIANCE
(Tolerance of Ambiguity x Sex x Class) Creativity Scores in Cells.

TABLE 23 MEANS and SIGNIFICANT RESULTS of ANALYSES OF VARIANCE

(Band Width x Sex x Class) Creativity Scores in Cells.

MEANS

Band Width	Boys ABC Hi	Boys ABC Lo	Boys DEF Hi	Boys DEF Lo	Girls ABC Hi	Girls ABC Lo	Girls DEF Hi	Girls DEF Lo
	n=17	n= 5	n= 5	n= 8	n= 3	n= 7	n=14	n=20
V Cr.	13.47	5.2	8.2	8.87	10.66	4.0	6.92	5.6
NV Cr.I	4.17	1.8	2.6	4.12	5.0	4.71	2.64	3.6
NV Cr.II	3.64	3.8	4.6	5.12	4.0	4.14	4.14	4.15
Cr. TaS	3.29	2.8	3.2	3.12	3.66	2.71	3.14	2.95
	n=13	n= 3	n= 5	n= 6	n= 2	n= 2	n= 6	n=12
Cr. Pic.	3.84	4.33	3.00	3.00	3.50	4.00	3.83	3.58

Analyses of Variance

Sig. p (R = response (High or Low))
(S = sex)
(C = class)

R	S	C	RxS	RxC	SxC	RxSxC
*				*		

Fig. 10

For details, see Table A 23 (Appendix)

TABLE 23 MEANS and SIGNIFICANT RESULTS of ANALYSES of VARIANCE (Band Width x Sex x Class) (Creativity Scores in Cells)

Fig 10 Mean Uses scores for high and low bandwidth.

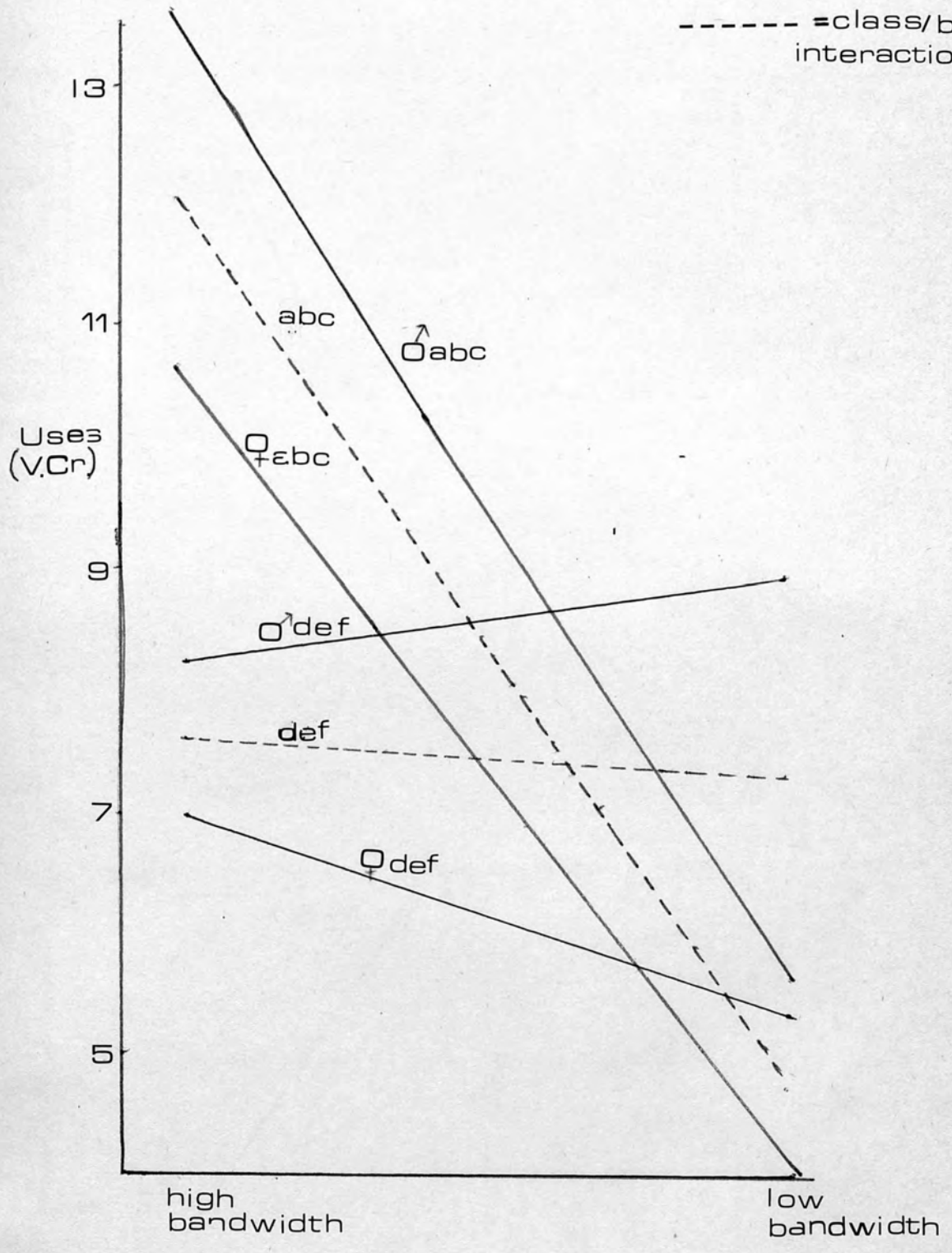
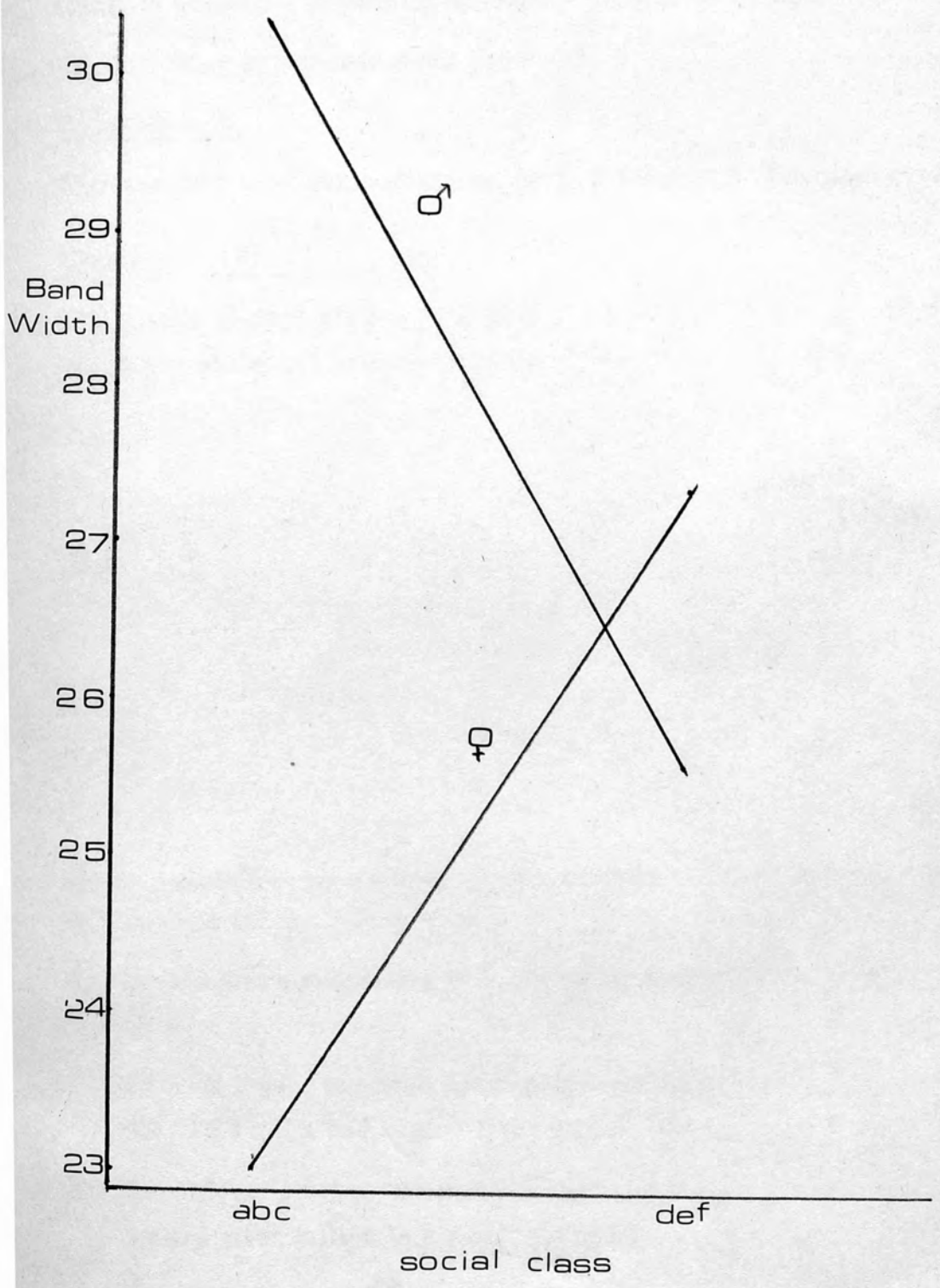


Fig 11 Sex x Social Class interaction for Band Width scores



Chapter 4. Creativity and a Child's View of his Parents' Disciplinary Behaviour.

It was argued in the Review of the Literature that the development of the personality attributes thought to be associated with creativity depended on the way the child was reared at home. Of particular importance was the type of disciplinary behaviour that the child experienced, for it was from the rewards and punishment meted out by the parents that the child would be likely to develop a pattern of behaviour acceptable to them.

The following hypotheses were produced:

Hypothesis 9:

Children who see their parents as permissive will be the most creative.

Hypothesis 10:

The child's view of his parents' disciplinary handling of him will differ according to the sex and social class of the child.

- Middle class children will see their parents as more permissive than working class children.
- Middle class boys will see their parents as more permissive than middle class girls.
- Working class girls will see their parents as more permissive than working class boys.

Hypothesis 11:

Children who see their parents as permissive will be "open to experience", tolerant of ambiguity, and have broad category boundaries.

Five measures of the subject's view of his parents' disciplinary handling of him were taken. They were

(i) the subject's responses to 2 sentences in the Sentence Completion test:

S2 If I want to go out to play, mother says ..... - P1

S3 If I get a bad report from school then ..... - P2

(ii) the subject's assessment of his parents' reaction to him arriving home soaked after falling in a pond. (Part III) - P3

(iii) the type of actions for which the subject remembered being last praised and blamed;

(those children being praised for acts of achievement rather than humanitarian or creative acts and those blamed for mildly naughty acts rather than overtly naughty acts being seen to have punitive parents).

Consideration will be given here to:

(i) the inter-relationship of these measures;
(ii) the relationship of these measures to creativity;
(iii) the relationship of these measures to the personality measures associated with being "open to experience";
(iv) the relationship of these measures to tolerance of ambiguity and breadth of categorising;
(v) the distribution of these measures according to sex and class factors.

1. Hypothesis 9: View of Parental Discipline.

(i) The ten intercorrelations between the 5 measures of parental behaviour as assessed by the subjects are given in Tables 24 (i), (ii), (iii) & (iv).

It was anticipated that the child who saw his mother as permissive when asked for permission to go out to play would also expect lenient treatment when he or she received a bad report and when he or she had fallen into an ice-covered pond: and that the child who saw his parents as permissive in these situations would also see himself as being rewarded for behaviour of an interesting, or humanitarian kind and blamed for overtly naughty behaviour in that permissive parents would allow full expression to the subject's impulses.

In fact, significant correlations between these measures were few. For boys, the only significant one was between the type of behaviour eliciting blame and that eliciting praise, i.e. those parents who were reported as rewarding their sons for interesting, creative or humanitarian acts rather than "achievement oriented acts" were reported as blaming the boy for overt disagreements (i.e. spitting in someone's face) rather than for verbal disagreements with parents or minor naughtiness (i.e. talking whilst parents were talking).

For girls, a similar correlation between behaviour eliciting praise and that eliciting blame was obtained, and two others also reached the 5% level. One was the correlation between described parental reaction to a bad report and the type of action remembered as last praised by the parents. Those girls who thought they would be punished for a bad report were likely to think they would be praised for achievement-oriented behaviour rather than creative, interesting or humanitarian acts. The other occurred between the type of action the girls reported as eliciting blame and their assessment of parental reaction if they had fallen into a pond. Those children who saw themselves as receiving punishment for falling into the pond also recalled the incident for which they were blamed to be an overtly naughty act.

When the data from Part I and II was examined, a significant correlation existed for girls between the two responses to the Sentence Completion test - those girls who saw their parents as permissive when receiving a bad report also saw them as permissive on receiving a request to play. (Table 24 (iii)) (Part I & II)

(ii) The general lack of correlations amongst these measures of parental behaviour meant that each piece of behaviour had to be considered in its own right with regard to the relationships between parental behaviour, creativity and the personality variables under consideration.
The exception here was the type of action eliciting praise and blame where the correlations for those two measures for both sexes were reasonably high.

(iii) Correlations between the creativity scores and the child's view of the parents' discipline as shown by the Sentence Completion test (S2 and S3) are set out in Tables 25 (i) and (ii).
The correlations between the creativity measures and the responses to the Sentence Completion test (S2 and S3) were insignificant, for boys and girls.
The Analyses of Variance (Response x Sex x Class) of the scores on the creativity tests produced one significant response effect (Table 26). Those children who gained the highest scores on the Incomplete Designs test saw their parents as neither strict nor permissive (S2, S.C.T.) when asked if they could play, but "in between". The working class boys group was the exception in that those boys who saw their parents

as permissive gained the highest creativity scores. (Figure 12).

Hypothesis 9 is thus rejected with regard to the measures of the child's view of parental behaviour obtained from a Sentence Completion test.

(iv) The correlations between the creativity measures and the degree of strictness with which the child saw his parents treating him if he fell into a pond (P.3) is set out in Tables 25 (i) and (ii). This measure was obtained from Part III of the research and attention should be paid to the reduced number of subjects (necessitating high correlation figures for significance) and the uneven distribution of the sample throughout the sex and social class groupings.

The only significant finding was obtained for girls. It goes against the hypothesis but fits the argument put forward post hoc with regard to defensiveness in girls and creativity. There was a substantial correlation between verbal creativity (Uses test) and lack of permissiveness, i.e. those girls who saw their parents as punitive gained the highest verbal creativity scores. There was also a significant correlation between verbal intelligence and this measure of parental permissiveness. However, even when intelligence was partialled out of the correlation between verbal creativity and parental punitiveness, the remaining correlation ($r = .45$) was still significant.

The Analyses of Variance (Sex x Class x Permissiveness) of the creativity scores (Table 27) indicated that parental permissiveness had a response effect on the Uses score and Story score, but not in the expected direction. In the Uses test, those children who saw their parents as punitive in all the social class and sex groupings except the middle class boys, gained higher scores than those who saw them as permissive. The middle class boys were the group to gain high scores on the verbal creativity tests regardless of their view of parental permissiveness.

Complex interaction effects occurred in the analysis of the scores on the Circles test (Figure 13). High punitiveness and high creativity scores appeared to be associated for middle class girls and working class boys. This result depended upon the one person in each of those cells of the Table, however, so cannot be considered reliable.

(v) Correlations are set out in Tables 25 (i) and (ii) between creativity measures and the type of behaviour eliciting praise and blame. (Permissive parents, it was argued, would reward their children for interesting and humanitarian acts rather than achievement oriented behaviour. Similarly, permissive parents would blame their children for overt acts of naughtiness rather than minor acts.)

There were no significant correlations between any of the measures of creativity and these measures of parental behaviour as seen by the child.

(Analyses of Variance would not be carried out because of the small number of subjects present in the sample.)

(vi) Hypothesis 9 is rejected on all five measures: those children who saw their parents as permissive with regard to discipline were not the most creative. On the whole, the results of the Statistical Analyses of the data indicated that there was no relationship between creativity and parental permissiveness as seen by the children. However, there was a negative finding with regard to the Uses and Picture tests, and those children gaining high scores on the Uses test saw their parents as punitive if they were to arrive home soaked after falling into a pond. Another finding of interest was that children who saw their parents as neither too strict nor too permissive (when asked by the child if he/she could go out to play) gained the highest scores on the Incomplete Designs test.

Overall, Hypothesis 9 was not upheld.

2. Hypothesis 10: Sex and Social Class Differences in the Children's View of Parental Permissiveness.

(i) Correlations were calculated between the five measures (described in Section 1) of parental behaviour as seen by the child, and social class (Tables 25 (i) and (ii). There were no significant correlations.

Analyses of Variance (Sex x Class) (Table 28) indicated only one significant result. This was an interaction effect for scores obtained from Sentence 3 (S.C.T.) - reaction to a bad report. Here, middle class boys and working class girls saw their parents as punitive and working class boys and middle class girls saw their parents as permissive. This was in direct opposition to the hypothesis (Figure 14).

(ii) Hypothesis 10 is thus rejected. The child's view of his parents' disciplinary handling of him does not differ according to his/her social class and sex except in one case which was the one response to parental reaction to a bad report (Sentence Completion test). Here, middle class boys and working class girls saw their parents as punitive whilst middle class girls and working class boys saw their parents as permissive.

3. Hypothesis 11: The Relationship between Parental Permissiveness as seen by the Child, and the Personality Measures said to be associated with Creativity.

(i) Correlations are set out in Tables 29 (i) and (ii).
If Hypothesis 11 were to be accepted, then it would be found that those children who were "open to experience", tolerant of ambiguity and willing to accept broad categories would see their parents as permissive.

The summary in Table 30 gives the pattern of results.

(ii) The general pattern of results indicates little consistency. First, there was some tendency for boys who saw their parents as permissive to be "copers", whereas those girls seeing their parents as permissive tended to be "avoiders". Second, there was also a tendency for boys who saw their parents as permissive to be unable or unwilling to acknowledge and express negative feelings on the frustration Questionnaire - whereas girls reacted in the opposite way. These two tendencies are directly opposite to each other.

(iii) Hypothesis 11 must therefore be rejected. There was no relationship apparent between children in contact with their feelings, tolerant of ambiguity and accepting broad category boundaries and the extent to which they see their parents as permissive. One finding perhaps worth some future investigation was the hint of a sex difference in handling of expression of emotion by the child and the seen permissiveness of the parent.

4. General Discussion:

In taking measures of the child's view of parent behaviour, it was hoped to

show that children who saw their parents as permissive would in fact show greater creative ability. It was argued in the Review of the Literature that children who had been allowed the freedom to experiment, who had not been subjected to pressures to conform and who were encouraged to be independent, would be creative. It was also argued that middle class parents would pay a great deal of attention to the internal dynamics of their children and would be less concerned with outward aspects of behaviour. They would encourage the child to talk about his feelings and would be less punitive if the child showed regressed behaviour or expressed ambivalence to his parents. By virtue of their better education, and the value placed on learning, the middle class parent would encourage curiosity and would give explanations when asked questions by the child. The literature suggested that boys would undergo somewhat different pressures from girls. Boys would get more explanations and less coercion and although more would be demanded in some senses, the demands would be likely to enhance creativity rather than to repress it, i.e. pressures for competition, pressure for independence. Girls would be more likely to be rewarded for conforming behaviour and would not be expected to be particularly independent or competitive. Working class girls were perhaps less subject to rigid discipline and the conforming pressures than working class boys and might therefore develop the ability to be creative to a greater degree than the boys. However, it was expected that factors of linguistic and intellectual development would prevent the degree of independence and the repertoire of behaviour associated with the middle classes (particularly the middle class boy). Thus a general class difference in creativity was expected.

Measures of parental behaviour as seen by the child were taken to see if sex and class interactions occurred. The relationship between child rearing practices to creativity and the hypothesised personality correlates of creativity were investigated. It can be seen from the discussion of results in this Chapter that the hypotheses were not verified. In part, the paucity of the results might be accounted for by the difficulty of assessing parental behaviour indirectly. However, other factors such as the different sex patterns in the interrelationship of the creativity measures, the lack of social class effects and the difficulties incumbent in measuring personality attributes added to the problems.

The lack of intercorrelation amongst the measures of parental behaviour as seen by the child, the lack of any of these measures occurring as predictors in the multiple regression equations and the lack of sex and class effects altogether made this aspect of the research disappointing.

Possible reasons for lack of significance in the correlations between the projective measures have been dealt with in Chapter 2.

While the results suggested that parental permissiveness - as seen by the child - was not related to creativity and the hypotheses were rejected, two results are worth mentioning. From the projective test (responses to Sentence 2, S.C.T.: I want to go out to play and .....) it was seen (with the exception of the working class boys) that those subjects who saw their parents as "in between" with regard to their responses, i.e. neither too permissive nor too strict, gained the highest scores on the Incomplete Designs test. In retrospect this result is understandable. There may be as many disadvantages for a child to be subject to too permissive rearing as to too punitive. The disadvantages of punitive treatment have already been outlined. With regard to permissive handling, we return to consideration of Pine and Holt's (1960) view that in addition to having access to primary process material, i.e. the unconscious experiences, the individual, in order to produce a creative product, must as well be disciplined enough in the cognitive fields to bring in controls (ego controls). He must have too, the cognitive skills (acquired presumably through reasonably disciplined learning) to produce a creative product. The above result, therefore, though produced in isolation, was understandable and indicates that in making further hypotheses about parental handling and creativity it would be essential to put conditions on the measurement of the degree of permissiveness which might enhance creativity.

The second finding, which was partly in line with the discussions in the previous chapters, was that those children who saw their parents as punitive (with regard to falling into a pond - Direct Question) gained the highest verbal creativity scores (Uses). (The exception here was the group of middle class boys where the punitiveness/permissiveness dimension failed to differentiate between levels of creativity.) In conjunction with this result there was a high correlation between strictness of parents as seen by the children, and verbal creativity, even when intelligence was partialled out.

The overall picture that appears for girls is that girls who were punitively reared happened to be intelligent and possibly as a result of this intelligence did well on verbal creativity tests.

The finding that working class boys who saw their parents as permissive gained a higher mean Incomplete Designs score fits in with the theories outlined at the beginning of the discussion.

TABLE 24 INTERCORRELATIONS between MEASURES of PARENTAL PERMISSIVENESS (as seen by the child).

(Correlations taken from Tables 6 and 7 Parts I, II and III)

(i) BOYS (n = 27) :

	S.2	S.3	DR	P	B
S.2		07	-18	35	09
S.3			34	06	-02
DR				-19	01
P					41*
B					

S.2 = Sentence Completion Test (P1)

S.3 = Sentence Completion Test (P2)

DR = Direct Response (P3)

P = Praised behaviour.

B = Blamed behaviour.

(ii) GIRLS (n = 22) :

	S.2	S.3	DR	P	B
S.2		.35	-35	.26	.27
S.3			-07	-40*	23
DR				06	46*
P					.40*
B					

From Parts I and II

(iii) Boys (n = 35)

	S.2	S.3
S.2		.105
S.3		

(iv) Girls (n = 44)

	S.2	S.3
S.2		.39*
S.3		

TABLE 25 CORRELATIONS between CREATIVITY MEASURES and MEASURES OF PARENTAL PERMISSIVENESS.

(i) BOYS:

	P.1	P.2	P.3	Behaviour Praised	Behaviour Blamed
Verbal I.Q.	-25	23	19	-34	01
NV I.Q.	-35	-01	29	-29	-14
Social Class	01	-20	-14	-08	-30
V Cr.	09	.10	21	01	17
NV Cr.I (Circles)	25	.10	-33	-08	19
NV Cr. II (Inc. Des.)	18	.20	20	-34	-19
Cr. Story	-27	-29	.25	-22	07
Cr. Picture	22	11	08	-11	08

No. of subjects in ▭ = 35

No. of subjects not in " = 27

(ii) GIRLS:

	P.1	P.2	P.3	Behaviour Praised	Behaviour Blamed
Verbal I.Q.	-17	-16	41*	12	24
NV I.Q.	17	-14	-09	26	-02
Social Class	-05	23	23	-13	-14
V Cr.	19	04	53**	-24	-14
NV Cr. I (Circles)	14	10	-14	07	-05
NV Cr. II (Inc. Des.)	03	01	36	06	04
Cr. Story	-06	-11	13	-02	-13
Cr. Picture	17	13	-05	14	-05

No. of subjects in ▭ = 44

No. of subjects not in " = 22

P.1 = Response to Sentence 2 (S.C.T.) - request to play.

P.2 = Response to Sentence 3 (S.C.T.) - bad report.

P.3 = Response to question of parental behaviour if subject falls into pond.

TABLE 26 MEANS and SIGNIFICANT RESULTS of ANALYSES OF VARIANCE
(Response (Aggression) x Sex x Class) Creativity Scores in Cells.

P1 S2 SCT	MEANS Boys ABC			Boys DEF			Girls ABC			Girls DEF		
Score:	3	2	1	3	2	1	3	2	1	3	2	1
n=	9	9	4	4	7	2	2	6	2	7	7	0
V Cr.	9.12	14.44	10.4	9.25	7.28	12.0	5.5	5.33	8.5	4.0	6.70	6.7
NV Cr.I	3.77	2.88	5.0	4.5	2.57	5.0	3.5	5.66	3.5	2.28	3.35	3.6
NV Cr.II	4.86	5.77	4.8	3.5	5.14	7.0	3.0	4.5	4.0	4.0	4.47	3.7
Cr. TaS	2.62	3.77	3.0	2.5	3.14	4.5	3.5	2.83	3.0	2.57	3.23	3.00

Analyses of Variance Sig. p (R = response(High or Low)) (S = sex) (C = class)	R	S	C	RxS	RxC	SxC	RxSxC
V Cr.							
NV Cr.I							
NV Cr.II	*	*					*fig
Cr. TaS							

Scores in Cells.

P2 S3 SCT	Boys ABC				Boys DEF			Girls	Girls ABC				Girls DEF			
Score:	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1
n=	8	1	8	5	1	3	6	3	1	2	4	3	14	8	5	7
V Cr.	13.0	24.0	9.12	10.8	7.0	4.33	10.8	9.0	8.0	9.0	3.25	7.0	5.5	8.37	5.0	5.7
NV Cr.I	3.5	3.0	3.62	4.0	2.0	3.66	3.5	4.0	7.0	4.0	5.7	3.3	3.5	3.0	3.0	3.0
NV Cr.II	5.75	8.0	4.25	5.4	8.0	3.33	5.83	3.6	4.0	3.0	4.5	4.3	4.21	4.23	3.8	4.14

P2 S3 SCT ctd	Boys ABC			Boys DEF			Girls ABC			Girls DEF		
Score:	3	2	1	3	2	1	3	2	1	3	2	1
n=	9	8	5	4	6	3	3	4	3	22	5	7
Cr. TaS	2.33	3.37	3.8	3.25	2.83	3.66	4.0	2.25	3.0	2.86	3.6	3.14

Analyses of Variance Sig. p	R	S	C	RxS	RxC	SxC	RxSxC
V Cr.		*					
NV Cr.I							
NV Cr.II		*					
Cr. TaS							

For details, see Table A 26 (Appendix).

TABLE 26 MEANS and SIGNIFICANT RESULTS of ANALYSES of VARIANCE (Response (Aggr.) x Sex x Class) Creativity Scores in Cells.

TABLE 27 MEANS and SIGNIFICANT RESULTS of ANALYSES OF VARIANCE

(Permissiveness (Direct Question) x Sex x Class) Creativity Scores in Cells.

MEANS

	Boys				Girls			
	ABC		DEF		ABC		DEF	
	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo
	n 4	n=12	n= 1	n=10	n= 1	n= 3	n= 9	n= 9
V Cr.	13.00	13.41	20.0	8.0	15.0	5.66	9.84	3.77
NV Cr.I	1.0	5.08	8.0	3.2	8.0	7.0	3.22	3.33
NV Cr.II	5.25	5.66	9.00	4.90	4.00	4.66	5.11	3.33
Cr. TaS	3.0	3.25	5.0	2.8	5.0	2.0	3.11	2.66
	n=4	n=12	n=1	n=10	n=1	n=3	n=9	n=9
Cr. Pic.	1.75	1.92	2.00	1.50	2.00	1.66	1.66	1.88

Analyses of Variance

Sig. p (R = response (High or Low))
(S = sex)
(C = class)

	R	S	C	RxS	RxC	SxC	RxSxC
V Cr.	*						
NV Cr.I					*	***	* fig 13
NV Cr.II		*					
Cr. TaS	*						
Cr. Pic.							

Hi - punitive

Lo - permissive

For details, see Table A 27 (Appendix)

TABLE 27 MEANS and SIGNIFICANT RESULTS of ANALYSES of VARIANCE (Permissiveness (Direct Question) x Sex x Class) (Creativity Scores in Cells)

TABLE 28 MEANS and SIGNIFICANT RESULTS of ANALYSES of VARIANCE.

(Measures of Permissiveness in Cells)

Measure of Permissiveness	Boys		Girls		Analyses of Variance		
	ABC n=22	DEF n=13	ABC n=10	DEF n=34	Sex	Class	S x C
S.C.T. S.2	2.13	2.15	2.0	1.91			
S.3	2.54	2.15	2.1	2.85			* fig 14
	n=16	n=11	n= 4	n=18			
Direct Punitiveness	1.93	1.63	1.75	2.44			
Praised	1.56	1.45	1.75	1.66			
Blamed	1.90	1.27	2.00	1.72			

For full details, see Table A28 (Appendix).

TABLE 29(i) CORRELATIONS between MEASURES OF PARENTAL BEHAVIOUR and PERSONALITY MEASURES.

BOYS:

		P.1	P.2	P.3	Behaviour Praised	Behaviour Blamed
S.C.T. coping	S.1	14	-17	11	06	03
	S.2	76***	03	01	20	-08
	S.3	28	60***	14	03	-07
	S.4	30	32	10	11	27
	S.5	49**	04	-19	43*	09
S.C.T. aggr.	S.1	14	-21	-13	-04	-05
	S.4	11	18	11	15	23
	S.5	47**	-02	-60***	21	-26
Tell a Story: aggr.		-06	-11	19	03	-15
Quest.	Q.1	11	-23	03	21	-27
	Q.2	29	-48**	04	-30	-07
	Q.3	00	-36*	-15	00	07
	Q.4	-06	-06	02	04	30
Recall	R.I	03	19	-11	-11	-16
	R.II	-16	21	09	-19	03
	R.III	-28	08	03	-29	-22
Tol. of Amb.		-03	-19	-14	-08	21
Band Width		-19	08	22	-06	21

No. of subjects in ▭ = 35

No. of subjects not in " = 27

▭ round correlation = correlation invalid.

S.C.T. = Sentence Completion Test.

P.1 = parental permissiveness in response to a request to play.

P.2 = parental permissiveness in response to receiving a bad report.

P.3 = parental permissiveness in response to subject falling into a pond.

TABLE 29(ii) CORRELATIONS between MEASURES OF PARENTAL BEHAVIOUR and PERSONALITY MEASURES.

GIRLS:

		P.1	P.2	P.3	Behaviour Praised	Behaviour Blamed
S.C.T. coping	S.1	02	-03	-33	-18	-31
	S.2	59***	23	-46*	02	-55**
	S.3	15	59***	06	19	00
	S.4	-20	09	-18	-20	-13
	S.5	16	-18	-43*	-07	-25
S.C.T. aggr.	S.1	06	03	-30	-07	-29
	S.4	-11	08	-08	-08	03
	S.5	16	-01	-58**	-01	-26
Tell a Story: aggr.		-06	22	-06	-29	17
Quest.	Q.1	-15	-54**	-01	-28	05
	Q.2	-28	-01	38	23	51**
	Q.3	05	21	14	21	15
	Q.4	43*	04	01	46*	05
Recall	R.I	-20	21	-13	-25	-23
	R.II	07	-01	-11	-25	-11
	R.III	-23	33	-01	-26	-30
Tol. of Amb.		03	-19	-14	-08	21
Band Width		-19	08	22	-06	21

No. of subjects in ▭ = 44

No. of subjects not in " = 22

TABLE 30

Openness to Experience and Permissiveness of Parents (As seen by child)

	No. of positive correl's possible	BOYS					GIRLS				
		P1	P2	P3	P4	P5	P1	P2	P3	P4	P5
Coping	4	+			+				=		-
Aggression	4	+		-					-		
Questionnaire	4		=	-			+	-		+	+
Tolerance of Ambiguity	1										
Band Width	1										

CODE:

P1 = response to request to go out to play (S.C.T.)

P2 = response to receiving a bad report (S.C.T.)

P3 = response to child returning soaked (Direct Question)

P4 = behaviour praised (high marks going to creative and humanitarian acts)

P5 = behaviour blamed (high marks going to overt naughtiness)

\+ = 1 positive correlation

++ = 2 positive correlations, etc.

\- = 1 negative correlation

= = 2 negative correlations, etc.

Fig 12 Mean Incomplete Designs score for high medium & low punitiveness (S.2.S.C.T

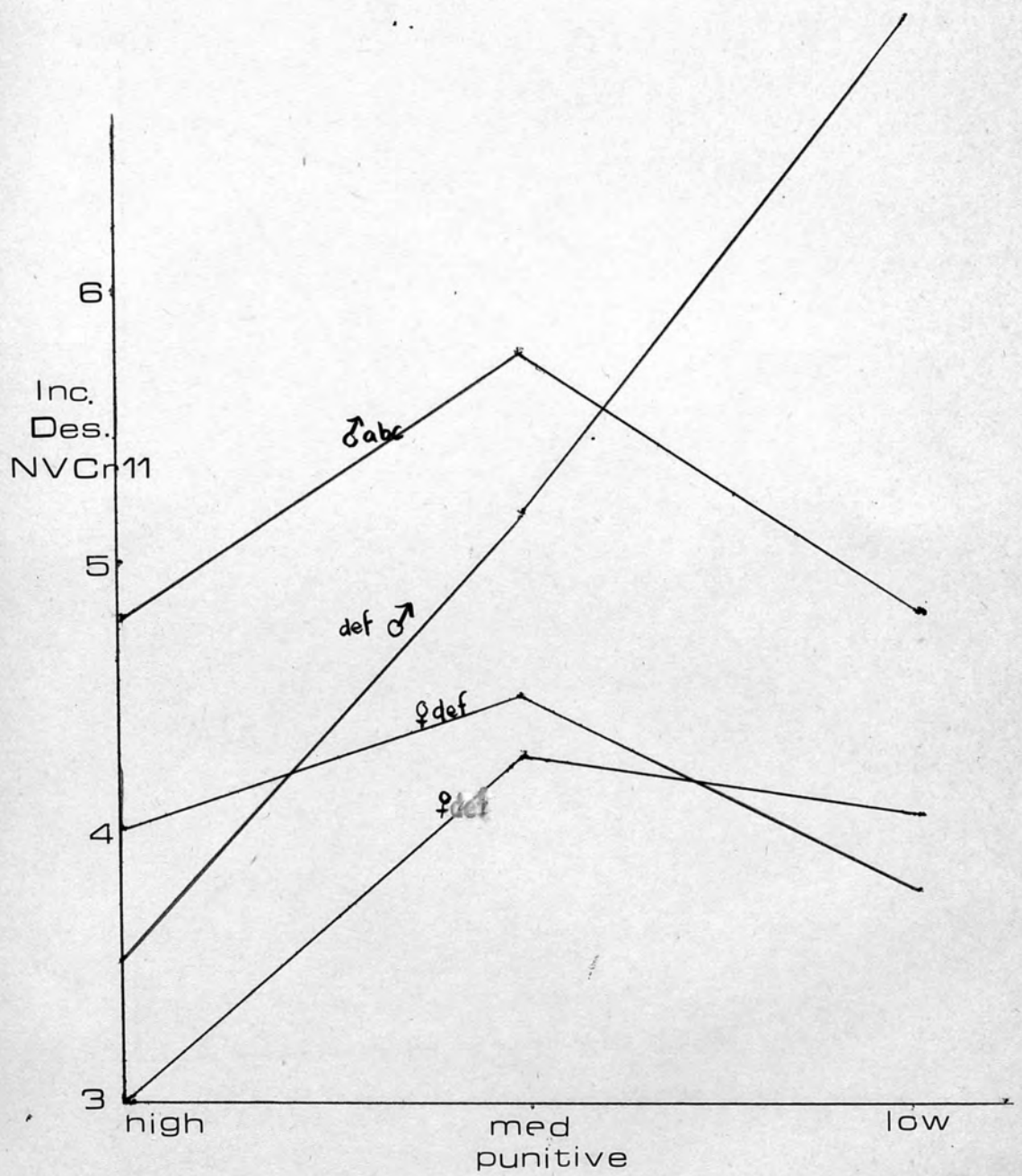


Fig 13 Mean Circles scores for high and low parental punitiveness.

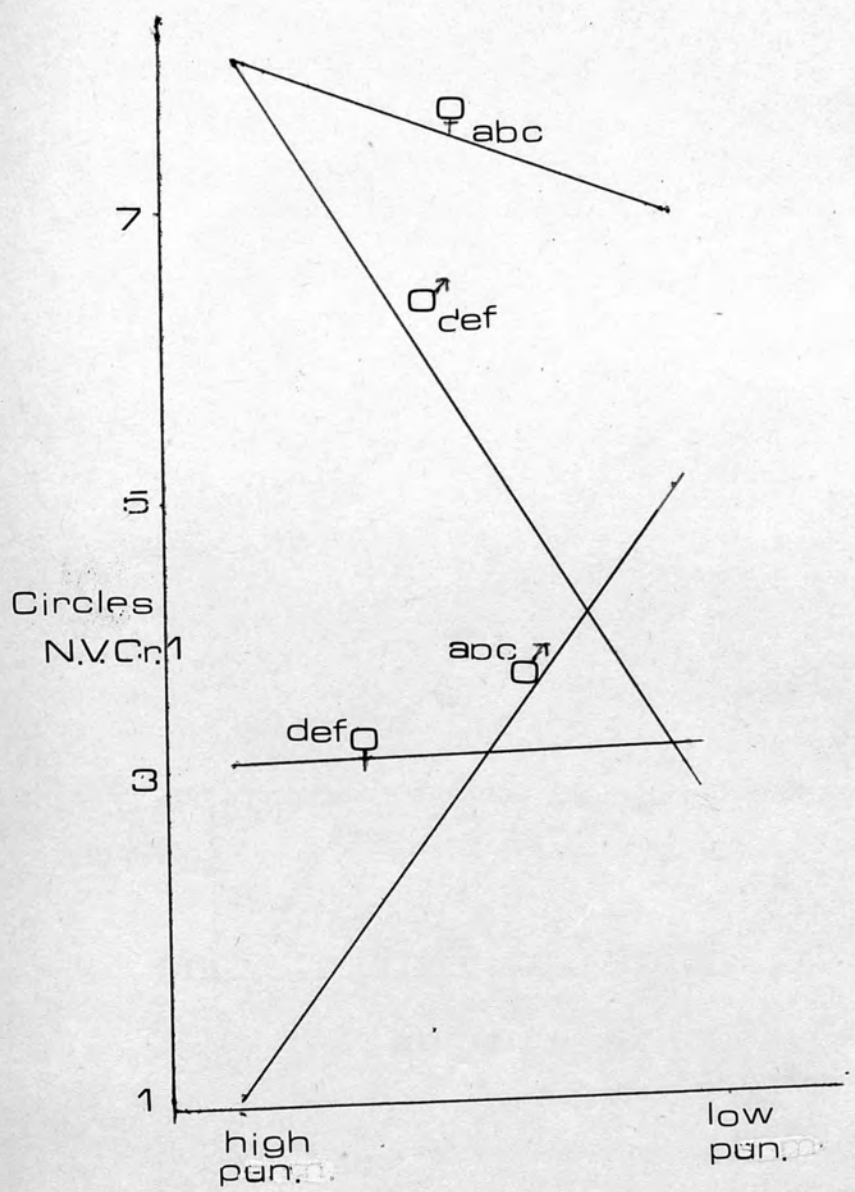
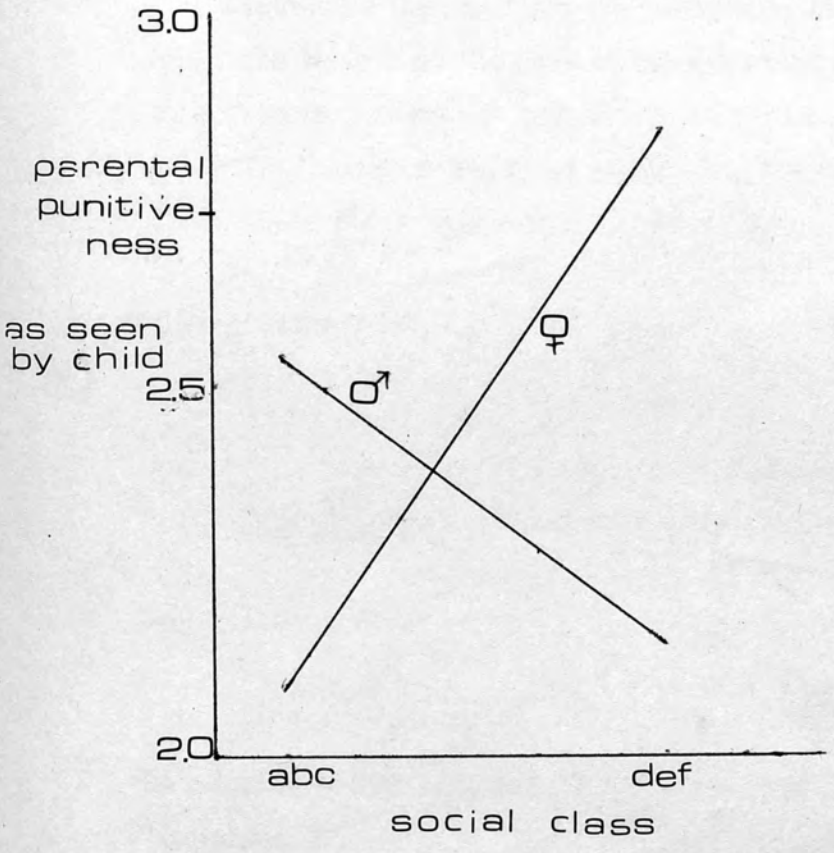


Fig 14 Contact with feeling X Class interaction (S.3). S.C.T.



Chapter 5. The Prediction of Creativity Scores.

1. Hypothesis 12:

Hypothesis 12 states that:

> It will be possible to predict children's creativity scores to a significantly greater extent from the total range of test scores and background data than from the intelligence test scores alone.

(i) Multiple regression equations were calculated for each of the 5 creativity test scores, using the data obtained in Parts I, II and III of the research. In addition, multiple regression analyses were calculated for each of the four of these creativity measures assessed in Parts I and II using only the variables obtained from Parts I and II of the research. The computer program added variables which could increase the multiple regression in the equation until no further additions improved the size of the correlation.
In both sets (except the prediction of verbal creativity for girls) the same variables emerged as predicting the creativity measures.
The number of subjects used in Parts I and II was substantially larger, so those equations have been used for discussion. Predictors emerged for four of the five creativity test scores.

(ii) Prediction of verbal creativity (Uses test):

Scores for boys were predicted by high bandwidth scores and a high level of expressed aggression in stories (Tell a Story test). For girls, high band width and high verbal intelligence test scores were the predicting variables. (Noteworthy is the dropping of intelligence as a predicting variable and the substitution of Recall and punitive parental behaviour when the child falls into a pond, when the analysis is carried out on only the 22 girls who completed the Part III variables.)

r_m boys = .592 N = 35 (pt I, II)

y = -17.354 + .741 bandwidth + 1.873 Aggr. Story.

(r_m boys = .521 N = 27) (pt I, II, III)

(y = -10.633 + .771 band width)

r_m girls = .481 N = 44

y = -16.725 + .151 V.Intell. + .267 band width (pt.I,II)

(r_m girls = .734 N = 22) (pt.I,II,III)

(y = -12.22 + .36 band width + 2.30 punishment)

(iii) Prediction of scores on the Circles test (non-verbal creativity I):

There were no significant predictors for either boys or girls. The Circles test was clearly not related to any of the measurements used in the study.

(iv) Prediction of scores on the Incomplete Designs test (non-verbal creativity II :

This test score was predicted for boys by high scores on verbal intelligence only.

Girls' scores were predicted by lack of aggression in response to a sentence in the Sentence Completion test involving sibling aggression.

r_m boys = .461 N = 35 (pt.I,II)

y = -4.325 + .092 V.Intell.

(r_m boys = .571 N = 27) (" I,II,III)

(y = -5.78 + .11 V.Intell.)

r_m girls = .350 N = 44 (" I,II)

y = 5.963 - .903 Agg. S4, S.C.T.

(r_m girls = .654 N = 22) (" I,II,III)

(y = 2.75 - 1.05 Agg. S4, S.C.T.)

(v) Prediction of scores on the Tell a Story test: (As similar predictors emerged regardless of whether the regression analysis excluded the data from Part III, it was decided that it was only necessary to do one multiple regression analysis. (Parts I, II and III))

Creativity of the story for boys was predicted by an avoiding response to Sentence 3 (S.C.T.), an unaggressive response to parental command (S.C.T.) and acknowledgement and expression of feelings (Q.2, Questionnaire). For girls, 5 variables predicted the creativity score on the Tell a Story test - verbal intelligence, intolerance of ambiguity, unaggressive responses to parental

command (S.C.T., high Recall and a small number of sticky pieces used in the picture test.

r_m boys = .714 N = 27 (pt. I, II, III)

y = 5.192 - .522 Coping S3, SCT - .877 Agg. S5, SCT + .621 Q2 Quest're.

r_m girls = .883 N = 22 (pt I, II, III)

y = -1.788 + .050 V. Intell. + .365 Intol. Ambig. - .899 Agg. Story - .021 few picture pieces + 1.598 Recall

(vi) Prediction of the creativity of the Picture test:

Picture test scores were predicted for boys by coping responses to Sentence 4 (S.C.T.), aggressive response to Sentence1 (S.C.T.) (a parental command) and lack of acknowledgement and expression of negative feelings (Q.3, Questionnaire).

For girls, only intolerance of ambiguity served as a predictor for this test.

r_m boys = .675 N = 27 (pt I, II, III)

y = 1.764 + .364 Coping S4, SCT + .404 Agg. S1, SCT - .823 Q3 Quest're.

r_m girls = .447 N = 22 (pt I, II, III)

y = .667 + .185 Intol. Ambig.

(vii) It is clear that it was possible to obtain multiple correlations from combinations of variables, for four of the creativity measures, which were greater than any single variable correlation with the creativity measures. The sizes of the obtainable multiple correlations were not great: they ranged from .35 to .88.

Verbal intelligence was a predictor in three of the eight equations. For non-verbal creativity II (Incomplete Designs) for boys, the beta coefficient for intelligence was .092 : it was the only predictor variable present. For verbal creativity for girls, the beta coefficient for intelligence was .151 - half the weight of the other predictor, band width (beta coefficient .267).

For creativity in the Tell a Story test, the beta coefficient for

intelligence was as low as .050, less than that for any of the three other predictors.

Eight variables other than intelligence contributed to the regression equations for boys, and four for girls. Only band width appeared for both sexes. The predictors for girls were indicative of defensiveness in that lack of aggression and intolerance of ambiguity appeared frequently in the equations. Band width predicted scores on the Uses test. The predictors for boys did not present such a consistent picture. Coping responses, aggressive responses and responses to the Questionnaire emerged as predictors for three of the creativity test scores, sometimes in opposite directions. Band width predicted scores on the Uses test.

Hypothesis 12 was accepted. It was possible to predict children's creativity scores to a significantly greater extent from the total range of test scores used in this research than from intelligence test scores alone - except in the case of the Incomplete Designs test for boys, where verbal intelligence only predicted creativity scores.

2. Discussion

The multiple regression equations have acted as a summary in a way to the findings of the research and are helpful in giving an overall picture.

The first obvious fact to emerge was that the equations for the two sexes almost always incorporated different predicting variables and confirmed the finding that emerged in nearly every aspect of the research, that boys differ from girls in their personality and motivational states and the interaction of these with cognitive abilities.

The second fact to emerge from the equations was the general absence of measures of parental behaviour (as assessed by the child) as predicting variables. The arguments about child rearing patterns and practices were based on the expected differences in the creativity levels of children from different social classes. When it was found that the social class of the child did not appear to affect his creativity, then it was to be expected that parental behaviour would not be seen to affect creativity scores.

It is admitted that multiple regression reliability depends upon the reliability and stability of the correlations contributing to the calculation. It is not intended to put any claims forward for these equations, beyond the fact that they have shown that verbal intelligence - and even more, non-verbal intelligence - could be outstripped as predictors of creativity scores.

Chapter 6. Conclusions:

The present research has raised many questions but found few positive answers. The main aim of the research was to examine some of the theories put forward by psychiatrists and psychologists (Storr 1972, Rogers 1959, Kubie 1958, 1965 et al) about the origins of the ability to be creative.

It was proposed to investigate the claim made that creativity was as much related to aspects of personality as it was to cognitive functioning. Hypotheses were formulated to show that certain experiences in early childhood, varying according to the social class and sex of the child, would affect the development of certain personality attributes; these would, in turn, affect the ability to be creative.

The particular personality characteristics highlighted for investigation were concerned with the ability to be "open to experience", to have access to and express natural ambivalence (i.e. to be free from harsh defences which would narrow experiences and make the uncertainty and ambiguity of the creative process intolerable). Tolerance of ambiguity itself was also investigated as an aspect of personality as was the kind of open-minded behaviour measured by a category width test.

Measures of the view the subjects had of the disciplinary pattern of their parents were also taken. It was argued that the middle class parent could be expected to be more permissive, more child oriented, more stimulating and encouraging of independence than a working class parent. Further, it was argued that a child's treatment and rearing would be likely to vary according to his/her sex within the social classes. Middle class boys would be treated less coercively than middle class girls and allowed freer reign to their impulses. Such treatment, we have argued, bodes well for boys' creativity in that boys would be less defensive, more "open to experience", more tolerant of ambiguity and more open-minded than middle class girls.

On rather more slender evidence, we have argued a case that working class girls would be at a greater advantage than working class boys. In so far as the girls were less subject to harsh physical discipline (a practice, Frenkel-Brunswik claims, which promotes intolerance of ambiguity and

defensiveness) and their expression of ambivalence tolerated, they could be expected to be more creative than working class boys.

The research was undertaken in the light of Wallach and Kogan's (1966) findings that when creativity tests - similar to those used in the present research - were administered, in a game-like setting, the creativity scores were not related to intelligence but did show a high degree of relationship among themselves. It seemed valid in the light of this work to consider that creativity would turn out to be a cognitive ability distinct from intelligence.

The results of the present research have failed to produce clear cut findings in line with those expected. Although intelligence did not prove to be significantly related to creativity in most cases, neither were the creativity measures highly interrelated. Although creativity is thought to be a complex factor (Ghiselin 1959, Anderson 1964, Taylor 1964, et al), such low correlations between the creativity measures were not expected. Thus before approaching the main body of the present research, we were faced with a basic criticism of the creativity tests: that they were measuring more than one kind of ability. Moreover, this was not a case of verbal and non-verbal measures forming separate clusters. A further problem was that the results indicated basic sex differences both in the way the creativity tests related to intelligence and how they related to each other. It thus became necessary to analyse the main data of the research in terms of each separate measure of creativity we had taken.

The Uses test, widely acclaimed as a useful and reliable creativity test, often served as a basis for comparison of the other measures. Boys gained significantly higher scores than girls on this test - this proved to be one of the most interesting findings of the research. Scores on this test did not, for boys, correlate significantly with intelligence as did girls' scores.

The Circles test proved to be the least productive of the creativity tests. It did not correlate with intelligence, nor any of the other creativity measures - and no other variable in the whole of the research emerged as a predictor of this score. Vernon (1965) observed that this test was one of the least useful tests in his own battery.

The Incomplete Designs test served as a measure of non-verbal creativity and for both sexes was positively correlated with the Uses test. There was no relationship between intelligence and Incomplete Designs for girls, but there was a sizeable and significant relationship between both measures of intelligence and the Incomplete Designs test for boys.

The freer creativity tests, where less structure was offered the subject (Tell a Story and Picture tests) again produced different results for boys and girls. For boys both these tests were sizeably and positively related to the Uses test, substantiating the fact that there was a higher level of generality among the scores for the boys than the girls. However, there was a significant relationship between the scores of the freer tests for girls, whereas there was not for boys.

Perhaps the most disappointing finding of the research was the absence of any social class effects, except in the case of the Circles test for girls only, even though the traditional middle class superiority was evident in the intelligence scores. It was suggested that the basic homogeneity of the sample could have accounted for this, in that the bulk of the subjects were lower middle class and upper working class and that there were not substantial enough differences between the parental child rearing practices of the two groups. Frenkel-Brunswik (1949 a & b) and Bronfenbrenner (1958, 6 have both made the point that lower middle class parents, by virtue of their striving to be upper middle class, were over punitive and over restrictive in their demands for conformity. Such attitudes would have acted against the development of the creative attitude.

It was suggested that further investigations with larger numbers of subjects, so that the 6 social class divisions (A - E) could be retained, might produce interesting findings more in line with the hypotheses. Alternatively, investigations of two groups of children with distinctly different social backgrounds (i.e. private school and slum school) might produce results which would support the hypotheses.

The only sex effect occurring in the research has already been mentioned - that of the superiority of boys' scores on the verbal creativity tests. Of note were the boys' higher scores on the Incomplete Designs, though this superiority failed to reach the 5% level of significance. Whilst the latter finding might have been expected in that boys are found to do better on non-verbal tests than girls, the former finding was unexpected.

An attempt was made to explain this result in terms of the girls' defensive stereotyped approach to the Uses test in that their associative flow was opened up in the threat situation and they gave responses according to the method of category exhaustion (Kogan and Morgan 1967) rather than producing solitary and unique responses. Tentative support to this explanation was produced by a small pilot experiment carried out on the present results. Girls were found to use the category exhaustion approach slightly more than boys. A finding not accounted for, however, was the very large number of unique and solitary responses given by the boys. It was suggested that the boys' lack of defensiveness (indicated by their ability to express aggression accounted for this superiority. It was also suggested that those girls who gained high creativity scores did so only because of their high intelligence (high creative boys were not necessarily intelligent) in that they could exhaust more categories. Their creativity scores, because of this approach, failed to achieve the excellence of the creative boys' scores.

The personality variables presented their own problems of measurement. The most intensively investigated characteristic - that of being "open to experience" was approached by measuring the ability to acknowledge natural ambivalence and to express this. It was a complex concept, involving reference to unconscious functioning, in the action of the defence mechanisms. Simple results were not expected. However, not only did the various measures fail to relate to each other, but very similar items within the tests themselves failed to be related also. The explanations that were offered to account for the latter finding involved Pine and Holt's (1960) suggestion that in addition to the expression of "primary process" (id dominated material) ego controls were also necessary in the creative process. These, they maintained, came into play some time after the inception of the free problem solving atmosphere was made available to the subject. It was thought, on reflection, that one of the basic errors of the research lay in only measuring "primary process" material such as aggression and not assessing whether subjects also had the controls to deal with this.

The measurement of tolerance of ambiguity and breadth of categorising - the remaining personality characteristics investigated - was fairly straight forward.

The measures of personality taken in this research varied in their usefulness

both as relating to creativity and predicting creativity scores. The multiple regression equations best summarised the results of this part of the research. Noteable was

(i) the difference in the predicting variables for the two sexes, and

(ii) the contradictory results obtained from the measurements of being "open to experience".

For girls, there was a consistent agreement amongst the personality variables predicting the various creativity measures, in that all those emerging in the equations were in the direction opposite to that hypothesised. A lack of "openness to experience" was positively related to creativity, as was intolerance of ambiguity and lack of aggression. The latter factors both emerged twice as predictors and thus should be viewed as the most useful personality measures for predicting creativity for girls. Band width and verbal intelligence predicted verbal creativity (Uses) and verbal intelligence with other personality factors indicative of defensiveness predicted the creativity of the Story. There were no predictors for scores on the Circles test. Lack of aggression only predicted scores on the Incomplete Designs test and intolerance of ambiguity only the scores on the Picture test. These results indicated that the basic hypothesis that lack of defensiveness characterised the creative individual was not upheld for girls, and provided a basis for believing the opposite to be nearer the truth.

For boys, the results were more conflicting. Band width scores and expressed aggression predicted verbal creativity (Uses). There were no predictors of the Circles test. Verbal intelligence predicted Incomplete Designs scores. Ability to "cope" and to express aggression predicted the creativity of the Story - this finding was, however, somewhat invalidated by a Questionnaire response indicating that the inability to acknowledge and express aggression positively predicted creativity scores on this test. The creativity of the Picture was predicted by a coping response and an aggressive response on the Sentence Completion test, but also by a lack of ability to acknowledge and express aggression as measured by the Questionnaire - another conflicting response.

Although overall the characteristic factors predicting creativity were in the directions hypothesised, several of the results were conflicting so that the chance nature of the results cannot be overlooked as a possible cause.

Perhaps the most noteworthy result was that of the relationship between band width score and the verbal creativity test (Uses) for both boys and girls. The Band Width Test is easily and quickly given and scored. In this study, it produced low correlations with measures of intelligence but significant correlations (.50 for boys and .37 for girls) with the Uses test. It could be regarded as a useful indicator of creativity when speed of giving and ease of scoring are priorities.

This test appears to reflect open-mindedness and the ability to venture into the unknown and as such suggests that these aspects of personality are very much associated with the creative approach. It was interesting to see that boys gained higher scores on both the Band Width and the Uses test than girls.

There was evidence of sex and class effects influencing Band Width scores and in the hypothesised direction, i.e. middle class boys gained higher scores than working class boys and working class girls gained higher scores than middle class girls. This was the only finding which substantiated any sex and class effects hypothesised though it was not in the direction

The final part of the research was concerned with investigating the relationship of parental permissiveness (as seen by the child) to creativity. Just as the task of assessing aspects of personality presented difficulties, so also did the assessing of the child's view of parental behaviour. In the present research both direct questions and projective techniques were used. There was little correlation between the measures. Again, separate analyses had to be used.

Two significant findings only emerged with regard to the relationship of parental permissiveness, as seen by the child, and creativity. The first finding suggested that children who saw their parents as neither too punitive nor too permissive (but in between) gained the highest scores on the Incomplete Designs test. The second finding suggested that girls and working class boys who saw their parents as punitive (Direct Question) gained the highest scores on the Uses test. The scores of middle class boys were not affected by the punitiveness-permissiveness dimension.

It was suggested that, in view of the high correlations between intelligence, verbal creativity and parental strictness for girls, parental strictness may

produce girls out of contact with their feelings who then tend to be more defensive, with the result that they obtain lower creativity scores. Whether there is a causal chain of this sort cannot be answered by reference to correlations, but it could be worth future investigation.

There were few indications that the personality variables under investigation were related to how the children saw their parental discipline - the results which did emerge were conflicting.

Although few conclusive results have emerged (and the most interesting have been those going against the hypotheses) it is thought that this investigation has gone a little further into the underpinnings of creativity than previous works. The results obtained are only tentative but do indicate that further work with the sort of measures used here would be productive in helping to refine and define the attributes closely associated with creative ability. We are far from being able to describe the environment and child rearing practices which will maximise creative behaviour, but it seems important to try to improve knowledge in this area since it is an important one for human potential.

The creative attitude is after all a sign of mental health, as Maslow says: "the healthy self-actualising person and the creative person are one and the same thing". If we can give some indications as to how the creative attitude can be achieved, we are in fact helping individuals to meet the new stresses of modern life. To quote Maslow again: "we should try to create an individual who is comfortable with change, enjoys change, who is able to improvise, who is able to face with confidence, strength and courage situations of which he has no forewarning".

HYPOTHESES SUMMARISED IN THE LIGHT OF FINDINGS:

Hypothesis 1

a) Creativity is distinct from intelligence, and

b) Creativity is complex rather than unitary.

Hypothesis 1(a) was partially accepted:

Creativity was distinct from intelligence except in the case of

i) the Incomplete Designs test, which was related to both verbal and non-verbal intelligence for boys; and

ii). the Uses test, which was related to verbal intelligence for girls.

Hypothesis 1(b) was only partially accepted:

Creativity does appear to be complex. The creativities measured by the Uses, Circles, Incomplete Designs and the Story and Picture tests generally do not appear to be related to each other.

There was however, a relationship between

i) the Uses and Incomplete Designs tests for both sexes; and

ii) the Picture and Story tests for girls only.

Hypothesis 2

a) Creativity scores will be greater in middle class than in working class children.

b) Class and sex will both affect creativity such that middle class boys will be more creative than middle class girls, and working class girls more creative than working class boys.

Creativity as measured by the Uses, Circles, Incomplete Designs, Picture and Story tests did not vary according to the class of the child. The one excephon was for girls - middle class girls gained higher scores on the Circles tests than working class girls.

Creativity as measured by the Circles, Incomplete Designs, Picture and Story tests did not vary according to the sex of the child. In the case of the Uses test, boys gained higher scores than girls.

Hypothesis 3

Children who are "open to experience" *(as measured by expressed aggression, coping with ambivalence and remembering emotionally arousing material) will be creative.

Hypothesis 3 was generally rejected. Children who were "open to experience" as measured by coping behaviour, a Questionnaire and recall behaviour were not creative. The one finding in line with the hypothesis was that boys who were "open to experience" as measured by expressed aggression were creative as measured by the Circles, Uses and Picture tests.

Hypothesis 4

A child's "openness to experience" will differ according to his/her social class and sex.

- Middle class children will be more open to experience than working class children.
- Middle class boys will be more open to experience than middle class girls.
- Working class girls will be more open to experience than working class boys.

Hypothesis 4 was rejected:
A child's openness to experience did not vary according to social class and sex.

The only significant finding from the Questionnaire in Part III indicated that middle class children acknowledged and expressed negative feelings to a greater extent than working class children.

Hypothesis 5

Children who are tolerant of ambiguity are creative.

Hypothesis 5 was rejected:
Boys who were tolerant of ambiguity were not creative. The finding was the reverse for girls. Girls who were intolerant of ambiguity gained high scores on the Picture and Story tests.

Hypothesis 6

A child's tolerance of ambiguity will differ according to his/her social class and sex.

- Middle class children will be more tolerant of ambiguity than working class children.
- Middle class boys will be more tolerant of ambiguity than middle class girls.
- Working class girls will be more tolerant of ambiguity than working class boys.

Hypothesis 6 was rejected:
A child's tolerance of ambiguity was not affected by sex and class factors.

Hypothesis 7

Children who are accepting of broad category boundaries will be creative.

Hypothesis 7 was accepted for scores on the Uses test only. Children who were accepting of broad category boundaries gained high scores on the Uses test.
Hypothesis 7 was rejected for the other four measures of creativity.

Hypothesis 8

A child's acceptance of broad category boundaries will differ according to his/her social class and sex.

- Middle class children will have broader category boundaries than working class children.
- Middle class boys will have broader category boundaries than middle class girls.
- Working class girls will have broader category boundaries than working class boys.

Hypothesis 8 was partially accepted:
A child's breadth of categorising varies according to his social class and sex.
Although middle class children did not accept broader categories than working class children, middle class boys accept broader categories than working class boys and working class girls accept broader categories than middle class girls.
Further middle class boys gained significantly higher scores than middle class girls.

Hypothesis 9

Children who see their parents as permissive will be the most creative.

Hypothesis 9 was rejected:
Those children who saw their parents as permissive did not gain the highest scores on the creativity tests.

Hypothesis 10

The child's view of his parents' disciplinary handling of him will differ according to the sex and class of the child.

- Middle class children will see their parents as more permissive than working class children.
- Middle class boys will see their parents as more permissive than middle class girls.
- Working class girls will see their parents as more permissive than working class boys.

Hypothesis 10 was rejected:
The child's view of his parents' disciplinary handling of him did not differ according to sex and social class factors.

Hypothesis 11

Children who see their parents as permissive will be "open to experience", tolerant of ambiguity, and have broad category boundaries.

Hypothesis 11 was rejected.
Those children who saw their parents as permissive were not "open to experience", or tolerant of ambiguity or broad categorisers.

Hypothesis 12

It will be possible to predict children's creativity scores to a significantly greater extent from the total range of test scores and background data than from intelligence test scores alone.

Hypothesis 12 was accepted:
It was possible to predict children's scores to a significantly greater extent

from the total range of test scores used in this research than from intelligence test scores alone.

The exception was the Incomplete Designs scores for boys - only verbal intelligence emerged as a predictor for this creativity score.

SUGGESTIONS FOR FURTHER RESEARCH:

1. To investigate with a larger sample (less homogeneous than the present one) the effects of social class on creativity.

2. To see if the sex differences found with some of the creativity measures used in the present research are universal phenomena.

3. To trace the reasons for these differences.

4. To look at the measures of being in contact with feelings so that they may be refined and experimented further with regard to creativity.

5. To assess the speed at which primary process material is released and the speed at which ego controls come in for individuals of high or low creative ability.

6. To take actual measures of parent behaviour with regard to the dimension punitiveness-permissiveness and see if there is a relationship between a child's ability to be creative and the disciplinary patterns in the home.

7. To investigate further whether there are social class differences still evident in parental disciplinary measures.

8. To assess in detail the different socialisation pressures to which the different sexes are subjected.

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APPENDIX

APPENDIX

TESTS USED IN PARTS I & II

1. Social Class:

1.1 Assessment of Social Class

The child's responses to the question "what does your father do for a job ?" were classified according to the Registrar General's Classification of Occupation. From these classifications it was possible to recode them to fit in with the 6-point scale used by Himmelweit (1954, 1967) and others.

The reliability of using the child's response about his or her father's occupation as opposed to going to the father himself was found to be high (see below, section 1.2).

The distribution of the subjects over the classes is given in Table A1. It can be seen that there is a considerable unevenness in distribution with some classes being represented by as few as two subjects. It was thus expedient to divide the subjects into two groups only middle class (non-manual workers) classes A, B & C and working class (manual workers) classes D, E & F.

For the purposes of the correlation matrices, classes A, B and C are coded as 1, and classes D, E and F are coded as 2.

Social Class is variable 20 in the matrices.

1.2 Pilot Experiment

To assess the accuracy of 9 and 10 year olds' response as to their father's occupation.

Thirty-four 9 and 10 year olds were asked the question "What does your father do for a job?". The reply was checked at source by asking the father of each child his occupation.

The responses are given in Table A2. Four of the thirty-two responses although partially correct were misleading in that the children failed to indicate the status of their fathers in the job (i.e. builder - a response given by a child - was in fact the owner of a small building company).

The important dividing line in this research is that between manual and non-manual jobs and in these 4 responses only one incorrect classification

would have been made.

26 of the children's responses were very accurate.
6 responses were slightly different from the father's response but these slight inaccuracies did not affect classification of social class.

The results of this experiment indicate that 90% of the 9 and 10 year olds (from both working and middle classes) give accurate responses to the question of their fathers' occupation.

2. Intelligence Measures:

2.1 Verbal Intelligence

The verbal measure of intelligence was already calculated and available on all the school record cards as a result of the yearly school tests. The test used was the N.F.E.R. Primary Verbal Test 3.

For each subject the score (an I.Q. figure) was used in its raw form (Variable 1).
The means for each class were calculated (Table A3) both for the whole sample and the sexes taken separately.
The means were calculated for the two groups of classes (i.e. A, B, C and D, E, F) (Table A3).

2.2 Non-Verbal Intelligence

The Raven's Progressive Matrices were used as the measure of non-verbal intelligence. The norms for English school children were available and raw scores were translated into I.Q. figures from Table A4.
Means for separate classes, separate sexes and amalgamated classes were calculated as for verbal I.Q. (Table A3).

2.3 Word Meaning Test

(i) Instructions: The instructions for the Word Meaning Test were the following. They were read out loud to the subjects and were also printed in the test pamphlet:

"Here is a short list of words which have more than one meaning. An example of such a word is "bark"; now this can mean either the bark of a dog, the bark of a seal or sometimes boats are called barks. Here I have given 4 meanings. Now I want you to look at the following words and write down as many meanings as you can think of for each word."

The words given were: bit, duck, pitch, port, punch, sack.

(ii) Scoring: This test was scored for fluency, i.e. one point was given for each different use. The total number of points gained for the responses to all 5 objects were summed for each subject. (Variable 6)

(iii) Calculations made: This test, originally planned as a creativity test, was clearly a test with a higher affinity to intelligence than to creativity (see Tables A5 (i), (ii), (iii) and (iv). It was thus discarded as a measure of creativity and used as a further measure of verbal intelligence.

3. Verbal Creativity: Uses Test

(i) Instructions: The instructions given orally to the subjects, and also printed in the booklets, were:

"Most people throw their empty baked bean tins (match boxes) away but they have thousands of interesting and different uses. I want you to think of as many different ways of using an empty baked bean tin as you can. You can use large or small tins and you can use as many as you like. Do not just think of the uses you have seen or heard of. Try to think of lots of new ways of using them. You have 5 minutes for this game.".

(ii) Scoring: The three indices used by Torrance and Yamamota (1965) - fluency, flexibility and uniqueness - were used in the present analysis for the alternate Uses test. Yamamota's (1965) interscorer reliabilities for all three measures were high, so scoring here was carried out only by the experimenter.

Fluency: The score was obtained by summing the number of responses given for each item.

Uniqueness: The score reflected the originality of the responses and was obtained from a frequency of response table (prepared for the present subjects' responses):

Each response was listed and the frequency with which the response occurred in the tested population was calculated (see Tables A6 (i) & (ii)). Scores were given according to the uniqueness of the response.

A score of 3 points = the response occurred once only in the test sample.

A score of 2 points = the responses occurred between 2 and 5 times.

A score of 1 point = the responses occurred between 6 and 14 times.

A score of 0 points = the responses occurred over 14 times.

Spontaneous Flexibility: is a measure used by Frick, Guilford, Christensen, Merrifield (1959) which reflects the number of categories the responses fall into, i.e.

if the stimulus item was a 'knife", the responses were 'cut bread', 'cut cheese' and 'cut butter', then only one category has been used and one mark is allotted.

(iii) Calculations made: The correlations between the six measures for the whole sample (fluency, flexibility and originality for the two items) were obtained (Table A7 (i)). The intercorrelations between all six measures were reasonably high (all above .5) and it was decided to use only one of the measures as representative of verbal creativity - originality. The main reason for this was that it was felt that originality captured the essence of creativity to a far greater extent than fluency and flexibility.

The two originality scores were summed for each subject - this was subsequently called the "Verbal Creativity Score" (Variable 3). Both originality scores correlated to a high degree with the total originality score (.89 and .88). Their correlation with each other was r = 0.65 (Table A7 (ii)).

The mean originality scores for the two sexes and the two social class groups (i.e. classes A, B + C and classes D, E + F) are seen in Table 9. (page 133)

The correlations between the verbal and non-verbal creativity measures were comparatively low (Table 8 (i) and (ii))and were thus not amalgamated to produce a composite creativity score.

4. Non-Verbal Creativity:

4.1 Circles Test

(i) Instructions: The instructions given orally to the subjects were slightly amended from those written in the test booklet. They were:

'In this game I want you to see if you can make a picture from the circle below. The circle should be the main part of whatever you draw. With a pencil you add lines to the circle both inside and outside the circle, whatever you want to complete the picture. Try to think of things that no one else will think of. Make the picture as interesting as you can and add a name or title underneath. '.

(ii) Scoring: The circles were scored for flexibility (in the same way as the Uses Test) in that the total score represented the number of different types of categories used by the subject.

Originality - Uniqueness:

As with the Uses test the responses of the whole sample were listed and a frequency of occurrence table was produced (see Table A8 (i)).

A score of 3 points	= the responses occurred only once.
A score of 2 points	= the responses occurred between 2 and 5 times.
A score of 1 point	= the responses occurred between 6 and 15 times.
A score of 0 points	= the responses occurred more than 15 times.

(iii) Calculations made: Correlations between flexibility and originality for the whole sample were calculated ($r = 0.39$ - sig. at the .001 level). (Table A7 (iii))

As in the Uses test the originality score was taken as the measure of non-verbal creativity in this test. (Variable 4)

Correlations between flexibility and originality in the Circles test and originality in the Incomplete Designs test were calculated. (Table A7(iii)). The correlations between the originality measures of the two tests was low and unsignificant. Thus they were not amalgamated to provide an overall non-verbal creativity score. The mean originality scores for the two sexes and the two social class groups (A, B + C and D, E + F) are given in Table 9. (Page 133.)

4.2 Incomplete Designs Test

(i) Instructions: The instructions given orally to the subjects and printed in the test booklet were:

"By adding lines to these figures on the next pages you can draw some interesting objects or pictures.
Try to think of some picture or object that no-one else will think of. Try to make it as complete and interesting a story as you can by adding to, and building up your first idea. Make up an interesting title for each of your drawings.".

(ii) Scoring: The test was scored for originality only from frequency tables prepared for each of the six designs. (See Table A8 (ii))

2 points = a response occurring only once in the population.
1 point = a response occurring between 2 and 5 times.
0 points = a response occurring more than 5 times.

The originality scores from the 6 designs were summed. (Variable 5)

(iii) Calculations made: The mean originality scores for the girls and boys from the two social class groups (A, B + C and D, E + F) are seen in Table 9. (Page 133)

5. Sentence Completion Test: Coping and Avoiding:

(i) Instructions: were given orally and also written in the test booklet:

"I want you to read each sentence and make up and write down an ending. There is no right answer. Write down the first thing that you can think of.".

(ii) Scoring: The responses were scored according to the concepts of "coping and avoiding", first introduced by Mainord (1966). He maintained that those people who were sensitised to the sexual and aggressive implications of the various sentence stems and could relate them to their own needs and emotions were "copers" and those who failed to recognise the implications of the sentences were termed "avoiders". He laid down the following criteria for assessing the degree of coping:

(1) the more specific the response, the higher the score;

(2) the stronger the expressed feeling the higher the score;

(3) the more arbitrary the response the lower the score.

Mainord used the scores 2, 1 and 0, giving the example:

If I were struck

Score 2 I would hit back.

Score 1 I'd quit, call for help.

Score 0 by lightning, I would die.

The scoring in the present test was as far as possible designed to use the above criteria and 3 scoring categories were used. (Detailed examples of scored responses are given in Table A10.

Sentence 1 - "Father says I must do my homework and I say....."

Score 3	Refuting parental authority, i.e. No, I shan't.
Score 2	Indirect refusal or querying father's authority.
Score 1	Acquiescing to father's wish or complete ignoring of the emotional content of the sentence.

Sentence 2 - "I want to go out and play and mother says....."

Score 3	Mother prohibiting play, refusal and reason.
Score 2	Mother refusing permission either for a reason due to exterior events or temporarily.
Score 1	Mother acquiescing and/or replies which directly avoid the conflict with mother.

Sentence 3 - "If I got a bad report from school....."

Score 3	Subject would be punished: physically or by withdrawal of privileges.
Score 2	Subject would meet with parental disapproval or anger.
Score 1	Denial of conflict.

Sentence 4 - "My sister and I had a quarrel....."

Score 3	Direct physical aggression expressed by the subject towards sister.
Score 2	Mutual aggression or parental anger or punishment occurred.
Score 1	Denial of aggression, i.e. I won or we were sent to bed.

Sentence 5 - "My father says I must go to bed and I say....."

Score 3 Refuting parental authority directly.

Score 2 Indirect refusal or querying parental authority.

Score 1 Acquiescing or denial of conflict.

In the Analyses of Variance the coping scores of Sentences 1, 4 and 5 were amalgamated because they appeared to be tapping one aspect of behaviour (that of personal reaction to conflict).

For the purposes of the calculation, two categories of coping were used:

High coping - raw score of 7 and above.

Low coping - raw score of below 7. (see Tables 13(i) & A13(i))

Sentences 2 and 3 were kept separate. For these responses:

High coping - raw score of 3.

Low coping - raw scores of 2 and 1.

(See Tables 13 ii, iii and A13 ii and A13 iii.)

6. Sentence Completion Test: Aggression:

(i) Instructions: see 5(i) above.

(ii) Scoring: The responses to the sentences were first scored according to the child's ability to refute parental commands (Sentences 1 + 5), to deal with conflict and be able to express aggression in the face of quarrels with a sibling (Sentence 4). Sentences 2 and 3 were designed to produce responses which would indicate the child's view of the degree of parents' permissiveness in the home. The responses were scored according to the following criteria (detailed examples of scored responses are given in Table A11).

Sentences 1 and 5:

S.1 "My father says I must do my homework and I say....."

S.5 "My father says I must go to bed and I say....."

Score 3 Categoric refusal or rude, antagonistic comment (i.e. it's too late, I don't like homework).

Score 2 Querying parent or cajoling.

Score 1 Acquiescing and responses of a "non sequitor" nature.

For the Analyses of Variance (see Tables 14(i) & (iii) and A14(i) & (iii)):

High aggression = raw scores of 3.
Low aggression = raw scores of 2 and 1.

Sentence 2: (used as a measure of parental permissiveness)
"I want to go out and play and mother says....."

Score 3 Direct refusal.
Score 2 Indirect refusal (do x first) or reason why refused.
Score 1 Acquiescence or acquiescence with a condition.

For the Analyses of Variance (Tables 26(i) and A26(i)):

High punitiveness = raw score of 3.
Medium punitiveness = raw score of 2.
Low punitiveness = raw score of 1.

Sentence 3:
"If I got a bad report from school then....."

Score 4 Physical punishment given by parents.
Score 3 Deprivation of privileges, telling off.
Score 2 Other punishment.
Score 1 Avoidance of conflict, parental disapproval

-In the Analyses of Variance Tables 26(ii) and A26(ii) these scores were used as categories; where necessary, categories 4 and 3 were collapsed for the Analyses of Variance (i.e. when subject numbers in the cells were low).

Sentence 4:

"My sister and I had a quarrel and....."

Score 4 Aggression (physical) expressed to sister by subject.
Score 3 Mutual aggression, or aggression by sibling.
Score 2 Parental interference, telling off, parental punishment.
Score 1 Denial of conflict or categoric statement, i.e. I won.

The categories were collapsed for the Analyses of Variance. (Table 14(ii and Table A14(ii))

High aggression = raw scores of 3 and 4.
Low aggression = raw scores of 2 and 1.

7. Tolerance of Ambiguity Test:

(i) Instructions: The instructions given orally were:

"You are now going to see some pictures; each one will be different. I want you to look hard at each picture and on the line below the picture I want you to write what you think the picture is.".

(ii) Scoring: It was particularly difficult to decide how to score this test, in the absence of pointers from Frenkel-Brunswik who designed this type of test. The test was designed to assess the subject's ability to respond to the perceptual stimulus presented. The speed at which the subject relinquished the initial object and gave an alternative response was the measure used here.

Each series of cards was presented to the subjects with the initial object A changing slowly to the object B as the series proceeds, and then object B changing slowly back to object A.

The sets of stimulus cards were presented and there were thus 4 measures of change. The score was taken to be the number of the card in the series at which the subjects gave a response other than the initial stimulus object:

i.e. Card 1 Response Car
Card 2 Response Car
Card 3 Response Dog

The score here would be 3.

In view of the low correlation between the four scores obtained from the booklets, only the speed of the first change in the first booklet was used. (Variable 8)

(iii) Calculations made: For the Analyses of Variance (Table 22 and Table A22) three categories were produced - high, medium and low.

High = Score of 6 and above.
Medium = Score of 5.
Low = Score of 4 and below.

For the analysis of the scores from the creative Picture test the small number of subjects necessitated only 2 categories - High (see High above) and Low (see Medium and Low above).

8. Band Width Test:

(i) Instructions: The following instructions were given orally to the subjects and were also printed in the test booklets:

"This game asks you to guess about a lot of things in our world, i.e. if you know that grown up men in the world are 5 feet 7 onches tall, you might guess that the smallest man in the world is 4 feet tall or only 3 feet tall. In this game you get a chance to guess about things like that. Just begin reading now and circle your guess for each of the things printed below.".

(ii) Scoring: The parts of each item of the test were keyed 1, 2, 3 and 4 representing the responses that are least to most discrepant from the central tendency provided for each item and the scores from the 5 items were summed to yield a total score. (Variable 7) A high score reflects a preference for broad band width and a low score reflects a preference for narrow band widths.

(iii) Calculations made: Means for the sex and social class groups (A, B + C and D, E + F) were calculated. (Table 20) (Page 164)
For the Analyses of Variance (Tables 23 and A23) categories of high and low band width were produced.

High = raw scores of 28 - 40.
Low = raw scores of 11 - 27.

9. Tell a Story Test:

(i) Instructions: The following instructions were given orally:

"Here you will see a picture. I want you to look at this picture and tell me a story about it. It need only be a short story but I want it to be about what is going on in this picture and what happens afterwards."

(ii) Scoring: The stories produced by the subjects in response to the picture were rated according to 3 criteria : creativity, aggression and distance from the stimulus. The ratings were carried out by two people - the experimenter and an experienced remedial reading teacher, trained in psycho-analytic methods. (See Table A12(i) for correlations).

Creativity/originality: The first score was carried out according to the creativity of the story told. In order to gain the top score of 3 marks, the story was to be consistently original in its theme. The least creative stories were given a score of 1 and those stories creative in parts were given scores of 2.

Expressed aggression: The second score involved the amount of aggression expressed in the story. The ability to face the conflict in the picture and to express it in a story are, it is hypothesised here, manifestations of the "coping", "openness to feelings" and lack of fear in expressing aggression which are characteristics of the creative child. Where more than one example of aggression (direct or indirect, i.e. monkey falling from a tree) is produced in the story then a rating of 3 was given. A story where one example of aggression was given was rated with a score of 2. Where there was no mention of aggression, i.e. complete avoidance of the stimulus, then a rating of 1 was given.

Distance from stimulus: This is a concept introduced by Gardner and Schoen (1962) who said that T.A.T. stories that are quite "distant"from the concrete physical properties of the stimulus tend to form few but wide groupings on the object sorting test. Highly imaginative stories (not relying on the stimulus, i.e. the picture, to dictate the story) were ranked as most distant thus showing up the clear link between imagination and originality. Those scores least related to the picture were given a score of 3 and those stories highly related to the picture were given a score of 1.

(iii) Calculations made:

(a) The scorer who assisted the experimenter with the score for this test rescored the stories for aggression (one week between scoring and re-scoring). Test-retest correlation was .95.

(b) Correlation between the two scores' ratings for the whole sample were high, r = 0.84 for aggression, r = 0.74 for creativity, r = 0.86 for distance from the stimulus. (See Table A12(ii)).

The scores of both the scorers were totalled for each of the three measures. For correlations, aggression was coded as Variable 16, creativity was coded as Variable 17, and distance from the stimulus was coded as Variable 18.

For the Analyses of Variance (Tables 15 and A15), where necessary, two levels of creativity of the story were obtained from the subjects' raw scores:

High Creativity = raw scores of 4, 5 and 6.
Low Creativity = raw scores of 3 and 2.

TESTS USED IN PART III OF THE RESEARCH

10. Selection of Subjects for Part III of the Research:

(i) It was the intention in Part III of the research to make comparisons between those subjects gaining the highest marks on the creativity instruments and those gaining the lowest marks. 40 subjects were selected, but 10 proved to have left the schools or to have been absent. They were replaced by the next 10 subjects appropriately falling in the high or low groups where possible.

(ii) A Table showing the distribution of scores for verbal creativity and non-verbal creativity II was plotted (Table A24) and the middle point in the distribution was determined. (Non-verbal creativity I scores were not used here in selection because of the low correlations between this test and the other creativity tests used).
The 49 subjects in Part III were assessed as to whether their scores fell above the middle line (high creativity) or below (low creativity) and Table A25 was prepared.
Those subjects gaining both high and both low scores are * asterisked.

(iii) The numbers of subjects (Part III) in the social class groupings are given in Table 1. (Page 119)

11. Questionnaire about Reactions to Conflict Situations:

(i) Instructions: The following instructions were read aloud to the subjects by the experimenter. They were also printed in the Test Booklet 3:

"Now could you look at the following sentences below and put a circle around the sentence ending which is most like what you would do. I would like you to be as honest as you can. I'm interested in what you would really do in each situation - not what you think you ought to do. Could you circle the "sentence endings" as quickly as possible, please.".

(ii) Scoring: This test was designed to assess the subject's ability to be in contact with and express his negative feelings aroused by a conflict situation.

There was a choice of three responses to each of the four questions. Each choice was coded according to the degree of expression of the negative feelings associated with the conflict situations.
The response showing the most amount of expression of feelings was given a score of 3 and the response with the least amount a score of 1.

(iii) Calculations made: Correlations between the scores on the Questionnaire are given in Tables 6 and 7. (Page 126 and 129)
It was necessary to collapse those groups with scores of 2 or 1 when the Analyses of Variance (Tables 18(i) and (ii) and A18(i) and (ii)) were carried out.

High "contact with feelings" = raw score of 3.
Low "contact with feelings" = raw scores of 2 and 1.

12. Type of Punishment the Child would expect from Parents:

(i) Instructions: Subsequent to reading the story on Page 1 of the Test Booklet 3, the subjects were given the following instructions:

"Now that you've read the story I should like you to tell me what would have happened if you had had a soaking instead of Jeremy and Jack. Would your parents have treated you like Jeremy's or like Jack's or in another way altogether. Could you say briefly in the space below what would have happened to you.".

(ii) Scoring: The responses were scored according to the type of punishment the child would expect to receive.

Score 4 = Physical punishment. Score 2 = Telling off.
Score 3 = Other punishment. Score 1 = Laissez faire.

(iii) Calculations made: A Table was prepared to show the distribution of subjects according to the type of punishment they would have expected to receive - Table A21.

For Analyses of Variance (Tables 27 and A27) categories 4 and 3 were collapsed as were 2 and 1.

High Punitiveness = raw scores of 4 and 3.
Low Punitiveness = raw scores of 2 and 1.

13. When Subject was last Praised or Blamed:

(i) Instructions: The following sets of instructions, printed in Test Booklet 3, were read aloud to the subjects by the experimenter:

'I want to find out a bit about your life at home now. First of all I would like you to try to remember when your parents were last pleased with you and praised you. I want you to try and remember when this was, what date, what time of day , morning, afternoon or evening and who praised you and for what. Could you fill in your answers in the space below.".

When the subjects had answered this, they were read the following:

'Now I want you to try to remember when you last had a row or argument with your parents or got into trouble. Can you give me the date, time of day, whom you had a row with and why you got into trouble.".

(ii) Scoring: This test was scored according to what the subject was praised for and what blamed for.

Praised:

Score 1 = Achievement - intellectual - sporting.
Score 2 = Doing a good turn - conforming behaviour - washing up, etc.
Score 3 = Doing something original and creative, i.e. worked out how to fix a bin to the side of a cupboard.

Blamed:

Score 1 = Wishing to do something naughty but not doing it - or arguing with parents, i.e. I wanted to go out to play but they wouldn't let me.

Score 2 = Disobedient acts, i.e. reading comics at table - talking while she was talking.

Score 1 = Direct act of naughtiness or aggression, i.e. spitting in his face, I was doing everything naughty.

(iii) Calculations made: Correlations between these measures and the other measures of parental permissiveness are given in Table 24.

14. Remembering Test:

(i) Instructions: The story printed in Test Booklet 3, Page 1, was read to the subjects:

"Would you please read this short story:
Jeremy and Jack, two nine year old boys, had gone to the park to play football, and after kicking the ball about for a while, they decided that they would look for something more exciting to do.

On their way to the park that morning they had seen a frozen pond in the garden of a deserted house and they would surely find something exciting to do there. They arrived at the pond and gazed at the glistening ice expectantly. The aim of their first game was to throw pebbles from one side of the pond to the other. Then Jack thought it might be more fun to slide the ball across the ice to Jeremy, instead of the pebble. At the second throw, however, it got caught in a pile of protruding sticks, right in the centre of the pond.
They both crept onto the ice warily but on the third step there was a loud crack and both boys sank waist deep into the freezing water.
They waded out and set off smartly for home with their teeth chattering.

Jeremy arrived home breathless and quickly told his mother what had happened. His father who had heard the commotion rushed into the kitchen. When he found out how his son had got his soaking, he was furious and beat him with his slipper. He shouted 'I'm sick and fed up with the way you're always looking for trouble. That beating should teach you to behave yourself and not go around looking for mischief. Now go upstairs and go to bed.
When Jack arrived home his parents were eating lunch and were surprised to see Jack in such a state. They heard his tale of woe and told him to get upstairs and change quickly before he caught a cold. Jack's mother sighed when she thought of the washing she'd have to do.

When Jack rejoined them his father said 'I hope that soaking has taught you a lesson, my boy. Next time you're looking for adventure make sure that you aren't risking your life. That pond might have been very deep. Sit down and have your lunch now.".

They were then asked, after they had replied to the request, to say how they would have been treated:

"Now I would like you to retell the story you read earlier in your own words.".

(ii) Scoring: Six aspects of the story (read to the subjects) were isolated and the stories reproduced by the subjects were scored according to recall of these six aspects:

1.	The beating	Jeremy
2.	The parental anger.	
3.	The order to go to bed.	
4.	The request for the boy to change.	Jack
5.	The mother's sigh at the prospect of so much washing.	
6.	The father's admonishment.	

One point was given for each aspect recalled and the total score for the first three aspects was termed Recall A; the total score for the last three aspects was termed Recall B. The score for aspect 1 (the beating) was used separately in the correlation table and was termed Recall C.

(iii) Calculations made: Where necessary some of the scoring categories had to be collapsed in order to carry out the Analyses of Variance (Tables 19 and A19) :

Recall I -	High Recall	=	raw scores of 3 and 2.
	Low Recall	=	raw scores of 1 and 2.
Recall II -	High Recall	=	raw scores of 3 and 2.
	Low Recall	=	raw scores of 1 and 0.
Recall III -	High Recall	=	raw score of 1.
	Low Recall	=	raw score of 0.

15. Sticky Shapes Creativity Test:

(i) Instructions: The instructions for this test were presented orally by the experimenter. They were also printed in Test Booklet 3:

"Now I want you to play a game. In the envelopes attached to this piece of paper you will find 100 assorted shapes with which I want you to make an interesting picture.

I want you to stick them on the next blank sheet and make up a picture with the title "Mouse in Danger".

A very important part of this picture will be the writing which you put on your picture to tell me about your ideas. You can label the objects in the picture, describe what is about to happen and do whatever you like with your pencil to make the picture more interesting and unusual.

You can use all of the pieces of paper or only a few. The most important point to bear in mind is that the picture should be original and interesting.".

(ii) Scoring:

Aggression Score: The pictures produced by the subjects were scored for aggression by two scorers - the experimenter and a remedial reading teacher who had previously been involved with scoring the stories produced in the Tell a Story test (Parts I and II). Scores of 1, 2 and 3 were awarded according to the originality and complexity of the picture.

The title "A Mouse in Danger" was chosen in order to give scope for the subjects' ideas as to what could make the life of a mouse dangerous. Because of the nature of the title, the subjects' ideas were likely to incorporate the expression of aggression in terms of danger to the mouse.

Score 1 = Those pictures incorporating only one item of danger, i.e. a cat chasing a mouse.

Score 2 = Thosepictures incorporating 2 dangers to the mouse.

Score 3 = Those pictures incorporating 3 or more dangers.

There was a discretionary point which could be awarded to either those pictures involving 1 or 2 items of danger if there was interesting elaboration in the picture.

Number of Sticky Pieces: The number of sticky pieces used by each subject in his picture was counted. This score served as a measure of the complexity of the picture (Variable 26) and of the willingness of the subject to explore and use new material. The number of pieces used would not always reflect the originality of the picture in that a very original picture could be produced with only a few pieces of sticky paper.

(iii) Calculations made: Correlations are set out in Tables 6 and 7. (Page 126 and 129)

TABLES (APPENDIX)

TABLE A1

DISTRIBUTION OF THE SUBJECTS OVER THE SIX SOCIAL CLASS DIVISIONS.

SOCIAL CLASS

	A	B	C	D	E	F	
Boys	5	11	6	9	2	2	Parts I + II (n = 79)
Girls	5	3	2	25	7	2	
Boys	4	8	4	8	2	1	Part III (n = 49)
Girls	3	1	0	11	5	2	

SOCIAL CLASS

	A, B + C	D, E + F	
Boys	22	13	Parts I + II
Girls	10	34	
Boys	16	11	Part III
Girls	4	18	

TABLE A 2

PILOT EXPERIMENT to assess the accuracy of asking 9 and 10 year old children their fathers' occupation.

* slightly different response - same classification acc. to Registrar General's definition

x different classification

	CHILD'S REPLY	ACTUAL OCCUPATION
1)	Lorry driver	Truck driver
2)	Engineer	Engineer
3)	Supervisor at Firestone	Staff Supervisor
* 4)	Drives a train	Night worker at British Rail
5)	Driver for I.C.I.	Driver
* 6)	Plays in quartet	Professor of Music
7)	Guard - London Transport	Guard
8)	Architect	Architect
9)	G.P.O. Worker	G.P.O. Worker
10)	Chauffeur	Chauffeur for a company
11)	Switchboard operator at factory	Switchboard operator at power station
12)	Works engine fitter	Engine fitter
13)	Tractor driver	Truck driver
14)	Bank Manager	Bank Manager
* 15)	G.P.O. Salesman - erector	Telegraph wire erector
16)	Works in lemonade factory	Works in lemonade factory
17)	Office chief clerk	Office chief clerk
18)	Milkman	Milkman
19)	Aeroplane mechanic	Aeroplane mechanic
* 20)	Manager of a lot of shoe shops	Director of a shoe company
21)	Lorry Driver	Lorry driver
x 22)	Builder, decorator	Owns small building business
x 23)	Builder	Owns small building business
x 24)	Works in a garage	Garage proprietor - self employed
25)	Farmer	Farm manager

TABLE A 2 (cont'd)

	CHILD'S REPLY	ACTUAL OCCUPATION
26)	An insurance man	Insurance agent
27)	Works on a farm	Farm labourer
* 28)	Works at the radio station	Radio officer
29)	Bank clerk	Bank clerk
* 30)	He makes shoes, he makes sure everything is all right	Director of shoe manufacturing company
31)	He goes to a chemical company, he does something with acids	Process worker
x 32)	When he works he does odd jobs on the farm	Farmer - self employed
33)	Farmer	Farmer - self employed
34)	Drives cattle around	Lorry driver - cattle

TABLE A3

MEANS OF INTELLIGENCE SCORES for the six Social Class Divisions

Social Class / I.Q.	A	B	C	D	E	F	
	n = 5	n = 11	n = 6	n = 10	n = 2	n = 1	
Verbal I.Q.	102.80	106.81	107.16	97.40	100.00	102.00	BOYS
Non-verbal I.Q.	97.40	109.63	117.16	109.50	104.00	101.00	
	n = 5	n = 3	n = 2	n = 25	n = 7	n = 2	
Verbal I.Q.	109.20	107.30	111.00	101.52	109.14	114.50	GIRLS
Non-verbal I.Q.	110.20	114.66	111.00	99.60	111.14	107.00	
	n = 10	n = 14	n = 8	n = 35	n = 9	n = 3	
Verbal I.Q.	106.00	106.92	108.12	100.34	107.10	110.33	Whole Sample
Non-verbal I.Q.	103.80	110.71	115.62	102.42	109.55	105.00	

Social Class / I.Q.	A B C	D E F	All Boys	A B C	D E F	All Girls
	n = 22	n = 13	n = 35	n = 10	n = 34	n = 44
Verbal I.Q.	106.00	98.15	103.08	109.00	103.85	105.02
Non-Verbal I.Q.	108.90	108.00	108.51	111.70	102.41	104.52

TABLE A 4

RAVEN'S PROGRESSIVE MATRICES
Sets A B C D E (1938-1956) (Brown)
Approximate Intelligence Quotients (Mean 100, SD 15)
Corresponding to Raw Scores

RAW SCORE	CHRONOLOGICAL AGE													
	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	ADULT
55														125
54														119
53												125	125	117
52											125	122	119	115
51								125	125	125	122	119	117	114
50							125	122	122	119	119	116	115	112
49							124	119	119	117	116	113	112	110
48						125	122	118	117	115	113	110	110	108
47						123	121	116	115	112	110	108	108	106
46						121	119	115	112	110	108	105	105	104
45					125	119	117	113	110	108	105	103	103	102
44				125	122	117	115	112	108	106	103	100	100	100
43				123	119	115	114	110	106	104	100	99	99	99
42				121	118	114	112	108	104	102	99	97	97	97
41				119	116	112	110	107	102	100	98	96	96	96
40			125	118	115	110	108	105	100	99	96	94	93	94
39		125	123	116	113	109	107	103	99	97	95	93	92	93
38	125	123	121	115	112	107	105	102	98	96	94	91	90	91
37	124	121	119	114	110	106	103	100	96	94	93	90	89	90
36	122	119	117	113	109	104	102	99	95	93	91	89	88	89
35	121	118	115	111	107	103	100	98	94	91	90	88	87	88
34	119	116	114	110	106	101	99	96	93	90	89	87	86	87
33	118	115	112	108	104	100	98	95	91	89	88	86	86	86
32	117	114	110	107	103	99	97	94	90	88	87	85	85	85
31	116	113	109	105	101	98	96	93	89	87	86	84	84	84
30	115	111	108	103	100	97	94	91	88	86	84	83	83	83

TABLE A 4 RAVEN'S PROGRESSIVE MATRICES
Sets A B C D E (1938-1956) (Brown)
Approximate Intelligence Quotients (Mean 100, SD 15)
Corresponding to Raw Scores

TABLE A 4 (cont'd)

RAVEN'S PROGRESSIVE MATRICES
Sets A.B.C.D.E. (1938-1956) (Brown)
Approximate Intelligence Quotients (Mean 100, SD 15)
Corresponding to Raw Scores

RAW SCORE	CHRONOLOGICAL AGE													
	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	ADULT
29	115	110	106	102	99	96	93	90	87	84	83	82	82	82
28	114	109	105	100	98	95	92	89	86	83	82	81	81	81
27	113	108	104	99	97	94	91	88	86	82	81	80	80	80
26	112	106	103	98	96	93	90	88	85	81	80	79	79	79
25	111	105	101	97	95	92	89	87	84	80	80	78	78	77
24	110	104	100	96	94	91	88	86	83	80	79	78	78	76
23	108	103	99	95	93	90	87	85	82	79	78	77	77	75
22	107	101	98	94	92	89	86	84	81	78	77	76	76	
21	105	100	96	93	91	88	86	83	80	78	77	75	75	
20	103	98	95	92	90	87	85	83	79	77	76			
19	102	97	94	91	89	86	84	82	78	76	75			
18	100	95	93	90	87	84	83	81	78	76				
17	98	93	91	88	86	83	82	79	77	75				
16	96	92	90	86	85	82	81	77	76					
15	94	90	88	85	84	81	78	75	75					
14	92	87	86	83	82	78	75							
13	90	84	83	81	81	75								
12	81	81	81	78	75									
11	78	75	75	75										
10	75													

RAVEN'S PROGRESSIVE MATRICES
Sets A B C D E (1938 - 1956)(Brown)
Approximate Intelligence Quotients(Mean 100, SD 15)
Corresponding to Raw Scores

TABLE A5

INTERCORRELATIONS AMONG THE THREE INTELLIGENCE MEASURES

(i) Whole sample n = 79.

* .05 sig. .23
** .01 sig. .30

	(N.F.E.R.) V. I.Q.	(Ravens) NV. I.Q.	Wd. Mgs.
V. I.Q.		.30 **	.49 **
NV. I.Q.			.41 **
Wd. Mgs.			

(ii) Boys n = 35

	V. I.Q.	NV. I.Q.	Wd. Mgs.
V. I.Q.		.493 **	.542 **
NV. I.Q.			.306
Wd. Mgs.			

* .05 sig. .32
** .01 sig. .42

(iii) Girls n = 44

	V. I.Q.	NV. I.Q.	Wd. Mgs.
V. I.Q.		.576 **	.533 **
NV. I.Q.			.445 **
Wd. Mgs.			

* .05 sig. .29
** .01 sig. .38

(iv)

	V. Cr.	NV. Cr. I	NV. Cr. II
Wd. Mgs. (Boys) n=35	.388	.111	.366
Wd. Mgs. (Girls) n=44	.285	.048	.018

TABLE A6(i)

FREQUENCY OF RESPONSES TO USES TEST

Uses of Baked Bean Tin:

A	air experiments	1
	animal	4
B	boat	19
	badge	1
	building	15
	building, parts of	1
	ball	4
	banging, drum etc.	5
	blowing	1
C	car, lorry etc.	6
	container	51
	chimney, funnel	8
	chains	1
	craft, models	22
	candle stick	5
	cut, blades	5
	cylinder	2
	clock	3
	cover	1
	counting	1
	cooking utensil	5
D	drawing circles	3
	design, decoration	10
	dust-bin, dolls	1
	dice shaker	3
E	ears	1
F	flower containers	16
	furniture, dolls	8
	flowers	1
G	gun	12
H	human form	12
	heavenly body	1
	hats	9
	hole maker	1
	hide out	1
	part of human	2
I	insect box	3
J		
K	kick	10
L	lift	1
	logs	2
	lamp shade	2
	loud speaker	6
	letter box	1
M	musical instrument	20
	measure	1
	mosaic floors	1
	mask	2
	mirror	2
	machine	1
N		
O	obstacle races	1
P	parachute end	1
	pendulum	1
	plane	1
Q		
R	rolling	2
	rocket, space-craft, flying saucer	3
	rollers	1
	robot	2
	radio	2
	rolling-pin	1
S	shelf stands	2
	scrap iron	1
	scraper	1
	seat	1
	scarecrow	1
T	telephone	19
	train	5
	target	4
	table mats	1
	toys	1
	telescope	1
	throw at burglars	3
	tunnel	1
W	wheels	3
	window blinds	1
	water bomb	1

TABLE A6(ii)

FREQUENCY OF RESPONSES TO USES TEST

Uses of Match Box:

A	animal	9
B	building	42
	boats	30
	part of building	8
	blow	1
	badge	1
	blackboard	1
	bird's nest	1
	bird cage	1
	bowl	1
	battle	1
C	collect	5
	container	42
	cars	25
	cover	1
	cargo	1
	craft	1
	chairs	1
	chew	1
	clock	2
D	draw, decorate	14
	dresses, clothes	4
E		
F	fuel for fire	2
	furniture	30
	flint (use)	1
	fridge	1
	fence	1
G	glasses	3
	guns	3
	gramophone	1
	graphs	2
H	human puppet	22
	hat	3
	parts of body	2
	handbag	1
	holes, making with needle	1
	hiding, for	1
I	insects	22
J	jewellery	6
K	knuckle duster	1
	kick	1
L	loudspeaker	2
	lamp shades	1
M	mask	2
	measure	1
	craft, model	12
N	nose game	1
O		
P	pictures, patterns	12
	platform	1
	planes	6
	pendulum	1
R	radios	6
	robot	10
	radiator	1
	rocket	1
S	sit on them	2
	shoe decoration	1
	stands	1
	smoking fingers	1
	striking matches	2
	scoop	1
	see-saw	1
	sharpen on them	1
T	throw	6
	train	7
	tricks	1
	tiddly winks	1
	tracks	1
W	wedge	1
	wheels	1

TABLE A7

Uses Test

(i) Product Moment Correlations between Verbal Creativity variables for whole sample (n = 79)

		B.B.		M.B		
		No.	Fle.	Ori.	No.	Fle.	Ori.
B.B.	No.	.825	.685	.641	.588	.494
	Fle.		.850	.662	.690	.589
	Ori.			.547	.611	.648
M.B.	No.				.832	.577
	Fle.					.758
	Ori.					

B.B = Baked Beans
M.B. = Match Boxes
No. = Fluency
Fle. = Spontaneous Flexibility
Ori. = Uniqueness or Originality

All correlations are sig. at p = .001 level.

(ii) Product Moment Correlations between Total Original Score and Individual Scores for the Two Uses Tests. (n = 79)

	Total Ori.	B.B. Ori.	M.B. Ori.
Total Ori.		.898	.889
B.B. Ori.			.648
M.B. Ori.			

All correlations are sig. at p = .001 level.

Circles and Incomplete Designs Tests

(iii) Product Moment Correlation between Non-verbal Creativity Variables (n = 79)

* = sig. at p = .05 level

	Circles Ori.	Circles Fle.	Incompl. Des. Ori.
Circles Ori.		.39 *	.195
Circles Fle.			.089
Incomplete Designs Ori.			

TABLE A8 i)

FREQUENCY TABLE - OCCURRENCE OF RESPONSE

CIRCLES - UNIQUENESS

A	animals	40
B	bicycles	25
	ball	39
	building	2
	punchball	3
	bubble	1
	bread	1
	button	1
	bolisha beacon	3
	bomb, mine	3
	bird's nest	1
C	clock	24
	compass	2
	cap	1
	crown	1
	case	1
	chair	1
	cylinder	1
	coin	2
	cup	1
	Cyclops	1
D	dartboard	2
	door	2
E	eye	4
	egg	3
F	face	26
	finger print	1
	flower	25
	fruit	5
	fish bowl	1
	ambulance light	1
	flag	3
G	glasses	2
H	horn	1
	hoop	1
I	ice cream	1
	insect	11
K	kite	2
	key-ring	1
	kettle	2
	key hole	1
L	lollypop stick	3
	light	3
	letters	3
	load	1
M	mirror/picture	3
	medal	2
	mace	1
	magnifying glass	1
O	Olympics	2
P	planets	42
	pulley	1
	pond	1
	person	54
	pudding/food/cake	6
	pram	1
	plate/pan	2
	patterns	6
	'phone	1
	pipe	1
R	rubber	1
	record	1
	rocket	3
	robot	7
	railway	1
S	saucer	1
	sign	1
	snail	5
	space capsule	1
	scanner	1
	spaceman with mask	1
T	T.V./radio	5
	tree	7
	toadstool	1
	tin	1
	train/plane radiator	5
	traffic lights	2
	think balloon	1
	telescope	1
	telephone	1
V	view	1
W	window	2
	weighing machine	1

TABLE A8(ii)

FREQUENCY TABLE - OCCURRENCE OF RESPONSE

INCOMPLETE DESIGNS

No.* = number of subjects giving response.

Code of 2 points if response is original.

Code of 1 point if response occu between 2 & 5 times in the teste population.

Code of 0 points if response occurs more than 5 times.

Design No. 1:

Response:	No.*
bowl/saucer/dish	19
boat	31
banana skin	5
bird/duck	2
crab claw	2
candle holder	3
car	1
bath	1
bulb growing	1
fairy	1
flying saucer	1
gun	1
jack in box	1
man /bird	1
orange slice	1
machine	1
seal	1
sword	1
sledge	1

Design No. 2:

boot/foot	11
house	9
boat	4
cheese	2
door	2
face	3

Design No. 2. (cont)

Response:	No.*
funnel/chimney	2
iron	3
magnet	2
plane	2
tent	2
throne/chair	5
bent piece of paper	1
coal bunker	1
candle	1
car	1
castle top	1
cheese	1
elephant's head	1
fire-place	1
ghost	1
golf club	1
hill	1
priest	1
mixed up man in a boat	1
mountain	1
periscope	1
pounder	1
rocket	1
stairs	1
slide	1
tree	1
weapon	1
witch	1
waves	1

Design No. 3:

contour map	6
horse	9
finger	8
man/nose/face	18
animal's head	6
foot	6
duck's head	3
foot	5
ghost	2
figure	3
mountain	4
rock/cliff	2
snake	2
cloud	1
dress of lady in a chair	1
flower	1
paw	1
table	1
walking stick	1
magician	1

TABLE A8(ii) continued:

No.* = number of subjects giving response.

Response:	No.*
Design No. 4:	
house	10
writing	7
ladder	8
car/boat/train	8
hat	3
cake	2
table	4
picture frame	2
railway line	3
zebra crossing	2
road	5
ruler	3
ox	2
bin	1
flag	1
gun	1
eel	1
face	1
music	1
post box	1
stretcher	1
spinning top	1
pipe	1
crane	1
rattle	1
rocket	1
T-square	1
shelf	1
Design No. 5:	
kite	22
boat	5
house	3
aerial	3
man	3
pyramid	2
rake	2
umbrella	4
tent	2
see-saw	2
cross	1
desks	1
dragon fly	1
flower	1
flag	1
hill	1
helicopter	1
Easter egg	1
map	1
maze	1
moon	1
sputnik	1
road	1
roof	1
rocket	1
plane	1
X	1
spade	1
squares	1
stairs	1
swing	1
window	1
zebra crossing	1
wheel	1
Design No. 6:	
snail	22
firework	5
elephant	2
cradle/pram/bed	4
apple	3
balloon	2
man	2
snake/worm	4
swiss roll	3
banana	1
bird	1
bandage	1
Christmas tree	1
cloud	1
cat	1
car park	1
dish	1
ear	1
eye	1
egg	1
flower	1
love heart	1
kettle	1
lake	1
mouth	1
girl with hair	1
rocket	1
moon	1
maze	1
target	1
treble clef	1
spoon	1
shoe	1
speedboat	1
optical illusion	1
trumpet	1
tunnel	1
telephone	1
wire broken	1
writing	1
weight lifting	1

TABLE A9

ANALYSES OF VARIANCE RESULTS (Sex x Class)

Intelligence and Creativity Measures:

	Source	d.f.	M.S.	F	P
Verbal I.Q.	Sex (S)	1	297.78	2.8	
	Class (C)	1	677.55	6.52	*
	S x C	1	28.26	.2	
	Error	75	S.S 7786.00		
Non-verbal I.Q.	S	1	26.85	.25	
	C	1	429.51	4.00	*
	S x C	1	267.27	2.50	
	Error	75	S.S. 8004.94		
Verbal Cr.	S	1	258.06	6.01	*
	C	1	32.34	.75	
	S x C	1	38.66	.90	
	Error	75	S.S 3220.7		
NV Cr.I	S	1	2.80	.5	
	C	1	11.44	2.1	
	S x C	1	8.99	1.6	
	Error	75	S.S 401.54		
NV Cr.II	S	1	14.30	3.5	
	C	1	.16	.03	
	S x C	1	.64	.10	
	Error	75	S.S 312.90		
Cr. Story	S	1	.38	.09	
	C	1	.00	.00	
	S x C	1	.02	.003	
	Error	75	S.S 314.41		
Cr. Picture	S	1	.51	.27	
	C	1	2.28	1.21	
	S x C	1	1.54	.82	
	Error	45	S.S 84.69		

* p = sig. at .05 level ** p = sig. at .01 level *** p = sig. at .001 level

TABLE A10

COPING - CODING OF RESPONSES

Sentence 1:

Score 3	No, I shant.
	I wont.
	No. I don't want to.
Score 2	I can't do it, Daddy.
	I will do it later. I'm reading this book.
	Not yet.
	I don't like homework.
	It's too late.
	Oh, must I.
	I want to watch TV/go out to play.
Score 1	Oh, all right.
	All right, if you say so.
	OK, because my favourite programme is on soon.
	Yes, I will.

Sentence 2:

Score 3	I could not/I can't.
	No, you don't.
	No, you came home muddy last time.
Score 2	You can go and play after you've done your bed.
	No, you have a cold.
	No, it's too cold.
	Tidy your room first.
	Help with the housework before dinner and you can play this afternoon.
Score 1	Yes, you can.
	All right, but you must not leave the garden.

Sentence 3:

Score 3	I might get a spank, I am spanked.
	Mum would give me bread and water for tea.
	I will get leathered.
	I would have to write sums for 4 days.
Score 2	My father would scold me.
	I would be growled at.
	My mum would not be glad.
	Mother would be disappointed.
	Mummy gets me a tutor.
Score 1	My mum would say I'm daft.
	My parents would be surprised.
	I would run away for a few minutes and hide.

Sentence 4:

Score 3	She hit me and I hit her back.
	I knocked her loose tooth out.
	I broke her leg.
	I bit her.
Score 2	It turned out to be all right/we got told off.
	My father sent me to bed/we had a fight.
	She started to cry but she did hit me first.
	I got told off/my father sent me to bed.
	We both got smacked/I got the blame for it.
Score 1	Then we made up.
	It ended up with crying.
	We were sent to bed.
	I won.

TABLE A10 (cont'd)

Sentence 5:

Score 3	I don't want to.
	No, I won't.
	Get lost.
Score 2	But it's only 8 o'clock.
	Please can I stay up.
	It is too early.
	It is only 7.30/why must I.
	I want to see the end of this TV programme.
Score 1	I'll go and get my things to go upstairs.
	Goodnight dad.
	Yes, father.

TABLE A11

AGGRESSION - CODING OF RESPONSES.

Sentence 1:

Score 3	I wont/I shant.
	I don't like homework.
	It's too late.
Score 2	Not yet.
	I will do it later, I'm reading a book.
	I can't do it daddy.
	Oh must I.
Score 1	Yes, I will.
	All right, dad.

Sentence 2:

Score 3	No, you cant/no, you don't.
Score 2	No, you have a cold.
	No, you came home muddy.
	No, it's too cold.
Score 1	All right, but you must not leave the garden.
	Yes, you can go out.
	Help first, play after.

Sentence 3:

Score 3	I would be growled at.
	I would get leathered/spanked.
Score 2	My father would scold me.
	My mum would give me bread and water for tea.
	My mum would not be glad.
	I would have to write sums for 4 days.
	My mum would say I'm daft.

TABLE A11 (cont'd)

Score 1	Mother would be disappointed.
	Mother gets me a tutor.
	I will try to improve.

Sentence 4:

Score 4	I beat her face in.
	I hit her.
	I bit her.
Score 3	We started fighting.
	We fought all afternoon.
	I got the better of her.
Score 2	I got blamed.
	We were sent to bed.
Score 1	We didn't make up.
	We made friends.
	We are not talking.

Sentence 5:

Score 3	Get lost.
	I want to see the end of this programme.
	No, I wont.
	I don't want to.
Score 2	Oh please, can I stay up.
	But it's only 8 o'clock.
	Why, it's not time for bed yet.
	It's only 7.30, why must I.
Score 1	Yes I shall, I'm tired.
	I'll go and get my things.

TABLE A12

TELL A STORY TEST

(i) Correlation between Aggression, Creativity and Distance from Stimulus Scores of the two Scorers:

A = obtained from scoring carried out by remedial reading teacher.

B = obtained from scoring carried out by experimenter.

	A			B		
	Aggr.	Cr.	D.S.	Aggr.	Cr.	D.S.
Aggr.		.104	.138		.005	.163
Cr.			.645***			.673***
D.S.						

n = 79

(ii) Intercorrelation between the two Sets of Scores (A & B):

		B		
		Aggr.	Cr.	D.S.
A	Aggr.	.840***	.046	.090
	Cr.	.046	.736***	.711***
	D.S.	.211	.641***	.857***

TABLE A13(i)

ANALYSES OF VARIANCE RESULTS

(Coping Response (S 1, 4, 5) x Sex x Class)
Creativity Measures in Cells.

Source	df	V Cr. M.S.	V Cr. F	NV Cr. I M.S.	NV Cr. I F	NV Cr. II M.S.	NV Cr. II F	Cr.(T.A.S.) M.S.	Cr.(T.A.S.) F	df	Cr. (Picture) M.S.	Cr. (Picture) F
Response	1	283.80	7.00**	25.07	4.8*	.117	.02	.71	.47	1	.55	.80
Sex	1	212.39	5.2 *	3.12	.5	12.31	3.00	.41	.27	1	.02	.02
Class	1	54.19	1.3	13.98	2.6	8.74	2.1	.02	.01	1	.007	.01
R x S	1	29.46	.7	.08	.00	10.56	2.5	2.66	1.7	1	.026	.04
R x C	1	82.75	2.0	8.59	1.6	.81	.2	2.66	1.7	1	.32	.47
S x C	1	69.05	1.0	6.79	1.3	.99	.2	.02	.01	1	1.26	1.85
R x S x C	1	2.05	.05	8.43	1.6	2.05	.5	.78	.5	1	.82	1.20
Error	71	S.S. 2858.76		S.S. 370.62		S.S 291.1		S.S 111.2		41	S.S. 27.0	

TABLE A13(i) ANALYSES OF VARIANCE RESULTS
(Coping Response (S 1, 4, 5) x Sex x Class)
Creativity Measures in Cells.

TABLE A 13(ii)

ANALYSES OF VARIANCE RESULTS

(Coping Response (S 2) x Sex x Class)
Creativity Measures in Cells.

		V Cr.		NV Cr. I		NV Cr. II		Cr.(T.A.S.)			Cr.(Picture)	
Source	df	M.S.	F	M.S.	F	M.S.	F	M.S.	F	df	M.S.	F
Response	1	8.26	.18	.024	.004	12.119	2.8	.56	.3	1	.03	.05
Sex	1	276.9	6.28*	1.936	.3	13.221	3.1	.42	.2	1	.06	.1
Class	1	40.56	.9	12.199	2.1	.346	.08	.02	.01	1	.29	.5
R x S	1	.546	.01	1.314	.2	6.217	1.48	.88	.58	1	.25	.5
R x C	1	7.80	.12	4.250	.78	.984	.23	1.04	.68	1	.04	.1
S x C	1	35.88	.8	7.122	1.32	.480	.11	.02	.01	1	.00	.01
R x S x C	1	31.20	.7	5.580	1.03	.016	.003	.14	.09	1	1.29	2.5
		S.S.		S.S		S.S		S.S.			S.S.	
Error	71	3141.08		388.24		302.5		111.7		41	20.8	

TABLE A13(ii) ANALYSES OF VARIANCE
(Coping Response (S2) x Sex x Class)
Creativity Measures in Cells.

TABLE A 13(iii)

ANALYSES OF VARIANCE RESULTS

(Coping Response (S 3) x Sex x Class)
Creativity Measures in Cells.

		V Cr.		NV Cr. I		NV Cr. II		Cr.(T.A.S.)			Cr.(Picture)	
Source	df	M.S.	F	M.S.	F	M.S.	F	M.S.	F	df	M.S.	F
Response	1	17.86	.4	2.89	.5	.13	.01	1.14	.8	1	.11	.1
S	1	232.43	5.2*	4.14	.8	12.5	1.82	.11	.08	1	.00	.005
C	1	42.58	.9	1.50	.2	.68	.9	.02	.02	1	.28	.4
R x S	1	39.05	.8	36.62	7.3**	19.55	.9	3.61	2.7	1	.23	.4
R x C	1	19.86	.4	.80	.1	12.5	.3	.86	.66	1	.10	.1
S x C	1	30.42	.6	10.27	2.03	13.29	.04	.01	.01	1	.12	.2
R x S x C	1	2.78	.6	1.10	.2	23.77	3.4	2.44	1.8	1	.74	1.4
		S.S		S.S		S.S		S.S			S.S	
Error	71	3147.13		358.38		291.1 502.40		95.9		41	23.41	

TABLE A 13(iii) ANALYSES OF VARIANCE RESULTS
(Coping Response (S 3) x Sex x Class)
Creativity Measures in Cells.

TABLE A 14 (i)

ANALYSES OF VARIANCE

(Response (aggression - S.C.T., S 1) x Sex x Class)
Creativity Scores in Cells.

Source	df	V Cr. M.S.	V Cr. F	NV Cr. I M.S.	NV Cr. I F	NV Cr. II M.S.	NV Cr. II F	Cr.(T.A.S.) M.S.	Cr.(T.A.S.) F	df	Cr.(Picture) M.S.	Cr.(Picture) F
Response	1	71.94	1.72	30.57	5.8*	0	0	1.40	1.08	1	1.40	2.6
Sex	1	262.56	6.3*	4.13	.7	15.83	3.76	.70	.54	1	.009	.01
Class	1	39.06	.9	13.92	2.6	.22	.05	.23	.18	1	.43	.8
R x S	1	39.31	.9	.06	1.4	.17	.04	.62	.48	1	.017	.03
R x C	1	32.69	.7	7.33	2.4	8.03	1.9	4.75	3.68*	1	.004	.01
S x C	1	38.58	.9	12.64	.4	1.24	.29	.234	.18	1	.069	.1
R x S x C	1	1.78	.04	2.36	5.19*	2.29	.5	3.35	2.60	1	.056	.1
Error	71	SS 2953.97		S.S. 368.83		S.S 304.5		S.S 92.21		41	S.S 21.5	

TABLE A14(i) ANALYSES OF VARIANCE

(Response (aggression S.C.T., S1) x Sex x Class)
Creativity Scores in Cells.

TABLE A 14 (ii)

ANALYSES OF VARIANCE

(Response (aggression - S.C.T., S4) x Sex x Class)
Creativity Scores in Cells.

Source	df	V Cr. M.S.	V Cr. F	NV Cr. I M.S.	NV Cr. I F	NV Cr. II M.S.	NV Cr. II F	Cr.(T.A.S.) M.S.	Cr.(T.A.S.) F	df	Cr.(Picture) M.S.	Cr.(Picture) F
Response	1	19.66	.5	2.46	.55	22.32	5.72*	2.66	1.7	1	1.49	1.31
Sex	1	233.95	5.4*	2.46	.55	15.96	4.09*	.16	.11	1	.29	.25
Class	1	33.37	.76	10.94	1.9	0	0	.16	.11	1	1.09	.9
R x S	1	11.74	.2	9.43	1.7	5.54	.14	.21	.14	1	.34	.31
R x C	1	59.77	1.3	3.71	.54	2.01	.51	.82	.5	1	.063	.05
S x C	1	39.31	.9	7.06	1.4	1.02	.43	.65	.43	1	.46	.41
R x S x C	1	64.76	1.4	.023	.004	1.13	3.9	5.74	3.8	1	.04	.03
Error	71	S.S 3060.3		S.S 394.17		S.S 278·0		S.S 106.17		41	S.S 80.3	

TABLE A14 (ii) ANALYSES OF VARIANCE

(Response (aggression S.C.T., S4) x Sex x Class)
Creativity Scores in Cells.

TABLE A 14 (iii)

ANALYSES OF VARIANCE

(Response (aggression - S.C.T., S 5) x Sex x Class)

Source	df	V Cr. M.S.	V Cr. F	NV Cr. I M.S.	NV Cr. I F	NV Cr. II M.S.	NV Cr. II F	Cr.(T.A.S.) M.S.	Cr.(T.A.S.) F	df	Cr.(Picture) M.S.	Cr.(Picture) F
Response	1	46.04	1.0	50.84	10.3*	3.89	.92	12.04	5.4*	1	.024	.01
Sex	1	23.33	5.2*	3.73	.76	11.11	2.6	1.25	.5	1	.00	0
Class	1	34.65	.7	17.84	3.64	1.12	.26	.26	.12	1	.04	.02
R x S	1	.32	.007	0	0	1.77	.42	.015	.01	1	.36	.2
R x C	1	4.90	.1	2.13	.43	3.50	.8	.39	.18	1	.06	.04
S x C	1	41.30	.9	19.57	3.9	.60	.14	.48	.29	1	.06	.04
R x S x C	1	.22	.004	11.44	2.3	.17	.03	4.77	2.1	1	38.2	.2
Error	71	S.S 3157.25		S.S 350.37		S.S 300.00		S.S 157.99		41	S.S 67.88	

TABLE A 14 (iii) ANALYSES OF VARIANCE

(Responses (aggression S.C.T., S5) x Sex x Class)

Creativity Scores in Cells.

TABLE A15

ANALYSES OF VARIANCE

(Response (aggression - T.A.S.) x Sex x Class)
Creativity Scores in Cells.

		V Cr.		NV Cr. I		NV Cr. II		Cr.(T.A.S.)			Cr.(Picture)	
Source	df	M.S.	F	M.S.	F	M.S.	F	M.S.	F	df	M.S.	F
Response	1	30.81	.63	3.53	.64	.01	.001	.05	.04	1	.004	.07
Sex	1	227.33	4.8*	2.64	.48	10.40	1.5	.29	.19	1	.004	.07
Class	1	36.67	.61	13.35	2.4	.18	.025	0	0	1	.432	.7
R x S	1	11.38	.24	.49	.08	30.33	4.4*	.51	.36	1	.009	.01
R x C	1	21.15	.4	8.80	1.6	8.27	1.2	1.44	.96	1	.009	.01
S x C	1	39.56	.62	9.32	1.69	3.25	.47	.21	.14	1	.009	.01
R x S x C	1	.65	.01	.01	.001	1.30	.19	1.07	.71	1	.65	1.1
Error	71	3345.71		392.81		484.66		109		41	23.5	

TABLE A15 ANALYSES OF VARIANCE

(Response (Agression - T.A.S.) x Sex x Class)
Creativity Scores in Cells

TABLE A16 — PILOT SURVEY of Nature of Responses to Uses Test (in terms of category exhaustion).

USES A
(Baked Bean Tin)

Category Exhaustion (no. of responses)

	6	5	4	3	2	1
Boys	1	0	1	3	3	42
Girls	0	0	3	2	5	20

USES B
(Match Boxes)

Category Exhaustion (no. of responses)

	7	6	5	4	3	2	1
Boys	0	1	0	1	1	9	29
Girls	1	1	0	2	2	4	14

PATTERN OF RESPONSES to Uses Test

1 = solitary response.

2 or more = responses fall in similar categories.

Object	Boys	Girls
1	1 . 1 . 1	2 . 2 . 1
2	3 . 1 . 1	1 . 1 . 1 . 1
3	1 .	1 . 1 . 2 . 1 . 1
4	4 . 1 . 1 . 1	2 . 1 . 3 . 1
5	2 . 1 . 1 . 1 . 1 . 1 . 1	2 . 1
6	6 . 2	4 .
7	2 . 1 . 1 . 1 . 1 . 1 . 1 . 1 . 1 . 1	3 . 1
8	3 . 1 . 1	4 . 1
9	2 . 1 . 1 . 1 . 1 . 1 . 1 . 1 . 1	4 . 1
10	3 . 1 . 1 . 1 . 1 . 1 . 1 . 1	1 . 1 . 1 . 1 . 1
1	2 . 2	3 . 2
2	1 . 1 . 1 . 1	3 . 1
3	2 .	4 . 0
4	1 . 3	1 . 1 . 1
5	1 . 6 . 1 . 1 . 1	1 . 1 . 1 . 1 . 1
6	1 . 2 . 1 . 1 . 1 . 1	1 . 1
7	4 . 1 . 1 . 1 . 1 . 1 . 1 . 2	4 . 2
8	2 . 1	2 . 3 . 2
9	2 . 2 . 1 . 1 . 1 . 1 . 1	6 . 1
10	2 . 1 . 1 . 1	7 . 1 . 1

TABLE A 17 ANALYSES OF VARIANCE (one way)

to see if the Creativity scores vary according to the outcome of the child's story (T.A.S.).

TABLE A 17

ANALYSIS OF VARIANCE (one-way)
to see if the Creativity scores vary according to the outcome of the child's story (T.A.S.).

Source	df	V Cr. M.S.	V Cr. F	NV Cr. I M.S.	NV Cr. I F	NV Cr. II M.S.	NV Cr. II F	Cr.(T.A.S.) M.S.	Cr.(T.A.S.) F	df	Cr.(Picture) M.S.	Cr.(Picture) F
Among	3	236.27	.60	7.61	1.45	2.57	2.10	28.58	1.88	3	1.70	.89
Within	75	394.26		5.26		1.38		4.08		45	1.92	

TABLES A18(i) & (ii) ANALYSES OF VARIANCE

(Response (Questionnaire) x Sex x Class)
Creativity Scores in the Cells.

Source	df	V Cr. Q.3 M.S.	F	V Cr. Q.4 M.S.	F	NV Cr. I Q.3 M.S.	F	NV Cr. I Q.4 M.S.	F	NV Cr. II Q.3 M.S.	F	NV Cr. II Q.4 M.S.	F
Response	1	23.33	.4	43.71	7.8*	6.21	.88	4.55	.8	6.91	2.2	.41	.06
Sex	1	33.34	.6	43.72	7.8*	1.80	.2	18.70	3.5	.22	.07	1.49	.23
Class	1	11.07	.2	55.82	9.9*	20.95	2.9	46.93	8.8*	3.97	1.2	.57	.09
R x S	1	21.78	.4	7.58	1.3	9.45	1.3	7.07	1.33	32.59	10.5**	.21	.03
R x C	1	149.10	2.8	7.91	1.4	2.70	.3	6.06	1.1	.51	.16	1.38	.2
S x C	1	30.56	.5	8.31	1.4	17.01	2.4	12.89	2.4	.79	.2	.68	.1
R x S x C	1	9.51	.1	2.84	.5	1.52	.21	1.14	.21	2.78	.9	5.15	.8
Error	41	2355.59		230.44		315.3		218.9		123.8		266.7	

Source	df	Cr. (T.A.S.) Q.3 M.S.	F	Cr. (T.A.S.) Q.4 M.S.	F	Cr. (Picture) Q.3 M.S.	F	Cr. (Picture) Q.4 M.S.	F
Response	1	1.55	.8	1.80	1.3	.59	1.1	.05	.10
Sex	1	.14	.07	3.96	2.8	.18	.3	.10	.2
Class	1	.04	.02	3.45	2.5	.05	.08	.58	1.3
R x S	1	2.73	1.15	4.10	2.9	.14	.2	.84	1.8
R x C	1	.01	.06	14.02	10.1**	.08	.1	.02	.03
S x C	1	.38	.2	.62	.44	.01	.01	.03	.05
R x S x C	1	.25	.1	.68	.49	.00	.00	.01	.02
Error	41	76.1		56.7		21.9		22.1	

TABLE A.19 ANALYSES of VARIANCE (Response(Recall) x Sex x Class)

Creativity Scores in Cells.

		V Cr.						NV Cr. I						NV Cr. II					
		R.1		R.2		R.3		R.1		R.2		R.3		R.1		R.2		R.3	
	df	M.S.	F	M.S.	F	M.S.	F	M.S.	F	M.S.	F	M.S.	F	M.S.	F	M.S.	F	M.S.	F
R	1	8.22	.17	172.72	3.4	85.47	1.6	.18	.05	.16	.03	.36	.06	7.12	2.03	2.66	.56	18.91	4.3*
S	1	33.42	.70	44.03	.80	154.16	2.8	17.01	4.44*	22.65	4.2*	7.65	1.3	1.20	.34	10.63	2.2	2.83	.64
C	1	12.88	.27	110.16	2.1	96.23	1.7	39.10	10.2**	48.13	9.08**	31.89	5.7*	5.70	1.3	.29	.06	.89	.20
$R_x S$	1	.29	.01	33.21	.65	8.89	.1	.28	.07	3.93	.74	11.14	2.02	17.73	5.0*	13.61	2.89	1.23	.28
$R_x C$	1	11.34	.02	60.38	1.19	.44	.01	.07	.01	8.15	1.5	4.04	.7	.01	.01	5.21	1.11	4.90	1.1
$S_x C$	1	8.23	.17	11.05	.21	16.21	.2	25.29	6.6*	13.81	2.6	39 23	7.13*	1.90	.54	.43	.08	.47	.1
$R_x S_x C$	1	16.66	.35	5.39	.10	13.44	.2	3.88	1.02	6.94	1.30	3.09	.5	37.86	10.8**	17.09	3.2	8.56	1.94
Er.	41	1953.8		2052.2		2266		159.86		218		226.8		147.3		193.6		182.4	

TABLE A 19 (cont'd)

ANALYSES OF VARIANCE

(Response (Recall) x Sex x Class)

Creativity Scores in Cells.

		Cr.(T.A.S.)						Cr. (Picture)					
		R.1		R.2		R.3		R.1		R.2		R.3	
Source	df	M.S.	F	M.S.	F	M.S.	F	M.S.	F	M.S.	F	M.S.	F
Response	1	.02	.03	8.15	5.4*	1.80	1.09	7.12	2.03	2.66	.56	18.91	4.3*
Sex	1	.01	.01	.03	.02	.23	.13	1.20	.34	10.63	2.2	2.83	.64
Class	1	.046	.08	.90	.6	.13	.08	5.70	1.3	.29	.06	.89	.20
R x S	1	.23	.4	1.16	.7	.01	.01	17.73	5.0*	13.61	2.89	1.23	.28
R x C	1	.28	.5	2.10	1.39	50.7	.31	.01	.01	5.21	.11	4.90	1.1
S x C	1	.03	.05	.33	.21	1.22	.7	1.90	.54	.43	.08	.47	.10
R x S x C	1	0	0	5.03	3.3	4.16	2.5	37.86	10.8**	17.09	3.2	8.56	1.94
Error	41	S.S 22.6		S.S 63.0		S.S 67.25		S.S 147.3		S.S 193.6		S.S 182.4	

TABLE A 19 (cont'd) ANALYSES OF VARIANCE

(Response (Recall) x Sex x Class)

Creativity Scores in Cells.

TABLE A 20 ANALYSES OF VARIANCE RESULTS

(Sex x Class)

* p = sig. at .05 level
** p = sig. at .01 level
*** p = sig. at .001 level.

PERSONALITY MEASURES:

	Source	df	M.S.	F	P
S.C.T. (S 1, 4 & 5) (coping)	Sex	1	.047	.02	
	Class	1	.089	.03	
	S x C	1	.033	.01	
	Error	75	175.01 S.S		
S.C.T. (S 3)	Sex	1	.005	.001	
	Class	1	.489	.9	
	S x C	1	22.7	.4	
	Error	75	44.0 S.S		
S.C.T. (S 2)	Sex	1	.114	.23	
	Class	1	.022	.04	
	S x C	1	.656	1.1	
	Error	75	44.48 S.S		
S.C.T. (S 1) (aggression)	Sex	1	.066	.09	
	Class	1	.019	.02	
	S x C	1	.00	.00	
	Error	75	55.8 S.S		
S.C.T. (S 5)	Sex	1	.027	.09	
	Class	1	.65	2.08	
	S x C	1	.016	.05	
	Error	75	23.46 S.S		
S.C.T. (S 4)	Sex	1	.025	.01	
	Class	1	.023	.01	
	S x C	1	.001	.004	
	Error	75	111.4 S.S		
Aggression (Story)	Sex	1	.95	3.54	
	Class	1	1.112	4.13	*
	S x C	1	.38	1.19	
	Error	75	20.19 S.S		
Band Width	Sex	1	115.29	3.38	
	Class	1	1.48	.43	
	S x C	1	334.04	9.79	**
	Error	75	2392.62 S.S		

TABLE A 20 (cont'd)

Personality Measures:

	Source	df	M.S.	F	P
Tolerance of Ambiguity	Sex	1	.47	.21	
	Class	1	.31	.14	
	S x C	1	.63	.27	
	Error	75	167.25		
Questionnaire: Q.1	Sex	1	.123	.1	
	Class	1	.009	.00	
	S x C	1	.333	.5	
	Error	45	30.85		
Q.2	Sex	1	.024	.07	
	Class	1	.726	1.91	
	S x C	1	.046	.12	
	Error	45	17.4		
Q.3	Sex	1	1.14	4.3	*
	Class	1	.192	.73	
	S x C	1	.017	.06	
	Error	45	12.12		
Q.4	Sex	1	.114	.1	
	Class	1	2.82	4.4	*
	S x C	1	.00	0	
	Error	45	28.92		
Recall R I	Sex	1	.571	.78	
	Class	1	.150	.20	
	S x C	1	.00	.00	
	Error	45	33.22		
" R II	Sex	1	.488	.6	
	Class	1	.017	.02	
	S x C	1	.113	.16	
	Error	45	31.89		
" R III	Sex	1	.012	.07	
	Class	1	.312	1.8	
	S x C	1	.066	.3	
	Error	45	10.2		

TABLE A 21 RESPONSE TO DIRECT QUESTION re. PARENTAL PERMISSIVENESS

Children's Estimation of Punishment:

	A B C	D E F	
4	3	1	
3	1	0	
2	4	4	BOYS
1	8	6	
4	0	5	
3	1	4	
2	1	3	GIRLS
1	2	6	

4 = physical
3 = other punishment
2 = telling off
1 = mild disapproval

ANALYSES OF VARIANCE
(Tolerance of Ambiguity x Sex x Class) &
(Band Width x Sex x Class)
With Creativity Scores in the Cells.

ANALYSES OF VARIANCE (Tolerance of Ambiguity x Sex x Class)
& (Band Width x Sex x Class) With Creativity Scores in the Cells.

Source		V Cr.			NV Cr. I			NV Cr. II		Cr.(T.A.S.)			Cr.(Picture)		
		df	M.S.	F	M.S.	F		M.S.	F	M.S.	F	df	M.S.	F	
Tol. of Amb.	Response	2	17.65	.3	5.78	1.0		.15	.03	.29	.19	1	.94	.47	
	Sex	1	273.64	6.1*	1.86	.3		16.45	3.4	1.26	.80	1	1.20	.61	
	Class	1	317.24	7.1*	7.16	1.3		.79	.1	0	0	1	.06	.03	
	R x S	2	.76	.01	16.76	3.1		.76	.1	1.28	.82	1	.70	.36	
	R x C	2	31.17	.6	8.62	1.6		3.59	.7	1.11	.71	1	.91	.46	
	S x C	1	37.56	.8	1.66	.3		.01	.00	0	0	1	.64	.32	
	R x S x C	2	45.98	1.0	12.05	2.2		.05	.00	1.04	.66	1	.01	.01	
	Error	67	2987.07		359.17			315.46		105.74		41	80.47		
Band Width	Response	1	206.39	5.09*	.003	0		1.16	.32	2.44	1.42	1	.27	.11	
	Sex	1	62.09	1.5	9.00	1.2		6.30	1.5	0	0	1	.27	.11	
	Class	1	11.55	.2	6.27	.9		.16	.03	0	0	1	2.47	1.05	
	R x S	1	.06	.01	1.96	.2		1.84	.4	.27	.16	1	0	0	
	R x C	1	172.82	4.2*	22.39	3.1		4.21	1.0	1.15	.67	1	.74	.31	
	S x C	1	.24	.01	15.09	2.1		.03	.01	.20	.12	1	2.09	.89	
	R x S x C	1	10.98	.2	5.91	.8		5.25	1.2	.14	.08	1	.07	.03	
	Error	71	2877		506.82			297.91		122.77		41	96.86		

TABLE A24 DISTRIBUTION OF SUBJECTS (ACCORDING TO CREATIVITY SCORES) USED IN PART III OF RESEARCH.

(n = 49)

Distribution of Scores - Non-verbal Creativity II

	Low					High					
Raw Score	0	1	2	3	4	5	6	7	8	9	10
Number of Subjects	0	4	9	13	14	15	12	3	6	2	1

Distribution of Scores - Verbal Creativity

	Low						High						
Raw Score	0	1	2	3	4	5	6	7	8	9	10	11	12
Number of Subjects	2	5	5	9	10	8	2	2	8	5	4	3	0

High (cont)

Raw Score	13	14	15	16	18	20	21	24	32	34
Number of Subjects	1	0	4	1	2	3	1	1	1	1

TABLE A 25 TO INDICATE THE NATURE (HIGH (H) or LOW (L)) OF CREATIVITY SCORES OF SUBJECTS IN PART III OF THE RESEARCH.

Subject	V Cr.	NV Cr. II	Both same
2	H	L	
3	H	H	*
4	H	H	*
5	L	H	
7	H	L	
8	H	H	*
9	L	H	
10	H	H	*
12	H	H	*
14	H	H	*
15	L	L	*
16	L	L	*
18	H	L	
19	H	H	*
20	H	H	*
21	H	H	*
24	H	L	
25	L	H	
26	H	H	*
27	H	L	
28	L	L	*
29	H	H	*
31	L	L	*
32	H	L	
33	H	H	*
34	H	H	*
35	L	H	
36	H	L	
37	H	H	*
40	H	H	*
42	L	L	*
51	L	L	*
52	H	L	
57	L	H	
59	H	H	*
60	H	H	*
61	L	L	*
62	L	L	*
63	L	L	*
65	L	L	*
66	L	H	
70	H	H	*
71	H	L	
72	H	H	*
73	H	H	*
74	L	L	*
77	L	L	*
78	L	H	
79	H	L	

TABLE A 26

ANALYSES OF VARIANCE

(Response S.C.T. (aggr.) x Sex x Class)
With Creativity Scores in the Cells.

S.2		V Cr. I		NV Cr. I		NV Cr. II		Cr.(T.A.S.)	
Source	df	M.S.	F	M.S.	F	M.S.	F	M.S.	F
Response	2	17.16	.38	2.90	.5	6.51	4.5*	3.15	2.4
Sex	1	15.81	.35	.51	.09	19.51	13.6*	.70	.5
Class	1	129.10	.28	3.22	.5	.30	.20	.02	.01
R x S	2	1.15	.02	14.18	2.5	2.25	1.5	3.47	2.47
R x C	2	6.23	.13	2.18	.3	2.10	1.4	3.65	2.6
S x C	1	.29	.006	5.93	1.04	.09	.0	.59	.42
R x S x C	2	19.60	.4	1.23	.2	6.46	4.6*	3.67	2.6
Error	67	2998.44		379.73		96.37		98.93	
S.3									
Response	3	38.3	.8	.90	.14	2.58	.6	.69	.4
Sex	1	219.75	4.9*	4.75	.7	24.36	5.6*	.05	.04
Class	1	137.19	3.09	12.35	2.05	.70	.16	.12	.08
R x S	3	4.78	.1	5.31	.8	3.36	.78	1.81	1.2
R x C	3	68.4	1.5	3.43	.5	4.78	1.1	.31	.2
S x C	1	90.54	2.0	7.42	1.2	1.65	.38	.002	.01
R x S x C	3	54.51	1.2	.64	.10	10.04	2.34	4.24	2.8
Error	63	2792.75		378.76		263.57		99.35	

TABLE A26

ANALYSES OF VARIANCE

(Response S.C.T. (aggr.) x Sex x Class)
With Creativity Scores in the Cells.

TABLE A27

ANALYSES OF VARIANCE

(Permissiveness x Sex x Class)
Creativity Scores in the Cells.

Punitiveness
Direct Quest.

Source	df	V Cr. M.S.	V Cr. F	NV Cr. I M.S.	NV Cr. I F	NV Cr. II M.S.	NV Cr. II F	Cr.(Picture) M.S.	Cr.(Picture) F	Cr.(T.A.S.) M.S.	Cr.(T.A.S.) F
Response	1	363.46	7.3*	.85	.22	7.72	1.75	.74	1.9	9.37	6.69*
Sex	1	135.40	2.7	6.06	1.4	19.84	4.5*	0	0	3.36	2.40
Class	1	9.96	.22	3.70	.88	2.56	.5	.03	.07	0	0
R x S	1	4.87	.09	.01	.001	2.21	.5	.02	.04	.93	0.66
R x C	1	27.88	.56	20.15	4.7*	16.12	3.6	.006	.01	0	0
S x C	1	24.91	.50	61.44	14.6***	3.42	.77	.003	.007	2.32	1.65
R x S x C	1	82.32	1.67	33.29	7.9*	1.43	.32	.56	1.4	.88	0.62
Error	41	S.S 2015.15		S.S 173.36		S.S 183.88		S.S 15.73		S.S 57.41	

TABLE A27 ANALYSES OF VARIANCE
(Permissiveness x Sex x Class)
Creativity Scores in the Cells.

TABLE A 28 ANALYSES OF VARIANCE

(Sex x Class)

MEASURES OF PERMISSIVENESS:

	Source	df	M.S.	F	P
S.C.T. (S 2)	Sex	1	.540	1.03	
	Class	1	.016	.03	
	S x C	1	.604	1.1	
	Error	75	39.1		
S.C.T. (S 3)	Sex	1	.270	.21	
	Class	1	.233	.18	
	S x C	1	5.164	4.001	*
	Error	75	96.36		
Direct Punitiveness	Sex	1	.333	.12	
	Class	1	.868	.32	
	S x C	1	2.145	.79	
	Error	45	123.8		
Praise	Sex	1	.35	1.4	
	Class	1	.081	.3	
	S x C	1	.002	.007	
	Error	45	11.42		
Blame	Sex	1	.58	.61	
	Class	1	1.95	2.0	
	S x C	1	.33	.34	
	Error	45	42.72		

TABLE A 29 RAW TEST SCORES Parts I & II (n = 79)

S's No.	V IQ	NV IQ	V Cr.	NV Cr.I	NV Cr.II	WM	BW	TA	S1	S5	S2	S3	S4	A	Cr	DS	S1	S5	S2	S3	S4
1	125	118	24	3	8	13	33	7	1	1	2	3	2	4	3	4	2	1	2	2	2
2	94	96	11	8	1	11	32	5	3	2	1	3	3	4	2	2	3	2	1	2	4
3	109	96	13	6	6	12	28	6	1	3	3	2	2	4	2	4	1	3	3	3	2
4	101	86	34	6	7	10	40	3	3	3	3	3	3	4	3	4	3	3	3	1	4
5	85	91	4	4	6	6	30	5	3	3	3	3	1	2	4	5	3	3	2	1	1
6	117	115	0	0	3	4	26	5	2	2	3	3	2	4	2	3	2	2	3	3	2
7	96	112	16	3	4	11	28	5	2	2	1	1	2	2	5	4	2	2	2	2	1
8	93	115	8	0	6	12	21	4	1	3	3	3	2	4	2	2	1	3	3	3	3
9	117	116	3	8	6	12	28	7	1	2	1	3	2	2	2	4	1	2	1	3	3
10	118	98	21	4	7	15	30	3	2	2	3	2	2	3	4	4	2	2	2	2	1
11	105	104	5	3	2	14	22	4	2	3	3	2	3	5	2	4	2	3	3	2	4
12	112	116	9	2	5	12	35	11	3	1	1	3	2	4	3	4	3	1	1	3	3
13	112	109	5	3	5	13	28	6	2	2	3	2	1	2	6	6	3	3	2	2	3
14	116	125	20	8	8	13	40	5	3	3	2	1	1	6	4	6	3	3	1	1	2
15	90	93	3	0	2	9	28	4	3	3	3	3	1	2	2	2	2	2	2	2	1
16	99	103	4	2	4	12	23	6	2	2	3	2	2	3	4	6	2	2	3	2	1
17	105	119	3	2	3	11	32	7	2	1	2	2	2	2	2	2	2	1	2	1	2
18	96	116	9	4	4	12	24	4	2	2	2	1	1	3	4	4	2	2	1	1	1
19	118	125	8	6	9	12	34	4	3	2	3	2	3	2	2	4	3	3	2	2	4
20	117	113	18	2	6	17	38	5	3	2	1	1	2	6	5	6	3	2	2	1	3
21	106	125	32	2	8	12	34	3	3	1	3	3	3	4	5	3	3	1	2	3	4
22	101	105	5	4	5	12	32	4	3	3	3	3	3	4	2	4	3	3	3	3	3
23	105	107	3	2	2	11	25	7	1	1	3	1	2	4	5	6	1	2	2	1	4
24	89	96	8	1	4	9	29	6	1	2	2	3	2	2	6	6	1	2	2	2	1
25	94	112	4	2	5	10	28	4	1	1	1	1	1	6	4	6	1	2	1	2	2
26	118	115	20	8	9	15	26	7	2	2	1	1	3	6	5	5	1	1	1	2	4

TABLE A 29. (cont'd)

S's No.	V IQ	NV IQ	V Cr.	NV Cr.I	NV Cr.II	WM	BW	TA	S1	S5	S2	S3	S4	A	Cr	DS	S1	S5	S2	S3	S4
27	89	107	15	0	3	11	28	2	3	3	2	3	1	2	2	2	3	2	2	2	1
28	81	100	5	5	4	8	26	5	2	2	2	2	2	2	2	2	3	3	2	2	1
29	101	118	11	4	10	10	28	7	3	3	3	2	1	5	2	4	3	3	2	2	1
30	100	112	9	4	4	12	29	4	3	3	3	2	2	6	3	4	3	3	3	1	3
31	103	103	3	6	1	7	33	6	3	2	3	3	3	2	2	4	3	3	3	2	4
32	94	123	10	2	4	8	18	5	3	3	3	3	3	4	2	3	2	2	3	2	4
33	118	112	7	2	8	14	20	5	2	3	2	3	3	4	3	2	3	3	2	3	4
34	82	96	15	6	5	7	27	9	3	3	3	1	3	5	3	2	3	3	3	1	4
35	102	101	2	4	5	6	22	4	1	2	2	2		2	2	2	1	3	2	2	1
36	114	112	15	8	4	13	33	4	2	2	3	3	3	2	5	6	1	2	2	2	4
37	122	113	7	5	5	12	31	7	2	2	2	2	2	4	2	2	2	3	1	1	2
38	115	105	10	2	3	12	28	4	2	2	2	1	2	3	4	5	3	2	1	1	3
39	93	109	1	5	3	11	23	3	1	2	2	2	2	3	3	6	1	2	2	2	2
40	102	112	6	8	8	8	27	4	3	3	3	3	2	3	2	2	3	3	2	2	1
41	112	113	8	7	4	10	19	6	2	2	3	3	3	4	4	6	3	2	3	3	4
42	109	112	4	8	1	13	24	7	3	3	2	2	2	4	2	2	3	3	2	2	1
43	101	119	4	3	5	11	11	6	1	2	2	1	1	2	3	4	1	2	2	1	1
44	110	116	3	0	2	12	19	5	2	2	3	3	3	5	3	4	1	2	3	2	4
45	112	106	2	2	6	8	16	5	2	2	3	2	2	3	2	2	2	2	2	2	1
46	102	108	3	7	1	12	24	3	1	1	3	3	3	4	2	2	1	1	1	3	4
47	101	96	5	7	4	6	28	5	3	2	2	3	1	4	2	3	3	2	2	3	1
48	98	109	10	5	2	8	40	5	2	2	2	2	1	4	4	6	2	2	2	1	2
49	93	93	11	3	5	7	31	4	1	2	2	3	2	2	2	4	1	2	2	2	1
50	106	96	0	2	3	10	31	6	1	3	3	2	2	4	3	4	1	3	3	3	2
51	95	112	5	0	4	11	40	5	1	2	2	3	2	3	2	3	1	3	2	3	3
52	94	95	6	4	2	4	21	6	3	3	3	3	2	4	2	2	3	3	3	2	3
53	97	103	1	3	6	10	22	7	3	2	3	3	3	4	3	2	3	3	2	3	4

TABLE A 2c (cont'd)

S's No.	V IQ	NV IQ	V Cr.	NV Cr.I	NV Cr.II	WM	BW	TA	S1	S5	S2	S3	S4	A	Cr	DS	S1	S5	S2	S3	S4
54	93	93	5	3	2	8	25	5	3	3	1	2	3	2	2	2	3	3	1	2	4
55	102	101	10	4	5	9	30	5	3	3	3	3	2	6	4	6	3	3	2	3	3
56	107	99	5	3	6	11	22	2	2	2	3	3	1	3	4	4	2	2	3	3	1
57	100	101	1	6	5	4	23	6	3	3	3	2	2	4	4	4	3	3	2	2	3
58	93	98	8	0	6	8	27	5	1	3	3	3	1	2	2	2	1	3	3	1	1
59	122	113	10	2	6	15	26	5	2	3	3	1	1	2	3	3	2	3	2	1	1
60	133	125	9	4	5	16	39	5	1	2	2	2	2	3	4	4	1	2	1	1	3
61	103	95	4	0	3	12	29	6	3	1	1	3	2	3	2	3	3	1	3	3	3
62	99	81	2	2	3	10	24	5	2	2	1	3	2	4	2	2	1	2	1	2	3
63	105	110	2	3	2	7	23	10	3	3	2	2	2	4	4	4	3	3	2	2	3
64	101	111	2	4	3	8	17	4	2	3	3	3	2	2	3	3	3	3	3	3	3
65	96	81	1	1	3	10	23	5	3	3	1	1	2	4	2	3	3	3	1	1	3
66	101	75	4	7	5	6	23	5	1	2	1	3	2	4	2	2	1	3	1	3	4
67	97	96	4	3	4	7	32	4	3	3	1	2	3	3	5	4	3	3	1	1	4
68	91	99	3	3	5	9	27	5	2	3	3	1	2	4	2	4	2	3	3	1	3
69	108	106	9	2	3	11	25	5	3	3	2	2	3	5	5	6	3	3	2	2	4
70	101	94	15	3	6	11	40	7	3	1	1	3	3	4	2	3	3	1	1	2	1
71	119	123	8	3	2	13	20	3	3	2	3	3	3	4	2	3	3	3	2	3	4
72	113	110	10	6	8	12	27	5	2	2	2	3	2	4	4	6	2	2	1	2	2
73	104	107	18	6	8	9	23	5	2	2	2	3	1	4	3	2	3	3	2	3	1
74	101	115	3	3	4	7	22	5	3	2	3	2	2	2	2	2	3	3	2	1	2
75	109	99	4	0	3	6	31	5	1	3	2	3	2	4	5	6	1	1	1	2	2
76	109	112	8	1	7	11	39	5	2	2	2	2	2	2	3	4	2	2	2	2	1
77	109	112	4	3	3	8	31	4	3	2	3	2	2	3	4	6	3	3	2	3	1
78	104	99	1	4	6	9	23	8	1	2	2	3	1	2	6	6	1	1	2	2	1
79	125	115	8	2	4	7	29	4	3	3	2	1	1	4	2	4	3	3	2	2	2

TABLE A 30 RAW SCORES for tests used in Part III of research.

(Boys n = 27)

Subject's No.	Make a Picture Test I	Make a Picture Test II	Make a Picture Test III	Questionnaire Q.1	Questionnaire Q.2	Questionnaire Q.3	Questionnaire Q.4	Punishment	Recall A	Recall B	Recall C	Praised	Blamed
	Var.26	27	28										
2	13	1	1	3	1	3	2	1	1	0	0	2	2
3	22	3	2	2	1	3	2	1	1	0	0	3	3
4	44	3	3	3	1	2	1	1	3	2	1	2	2
5	42	1	1	3	3	3	2	1	1	0	0	2	2
7	19	2	2	3	2	1	1	2	0	0	0	2	3
8	13	2	1	3	2	2	3	3	2	1	1	2	2
9	31	1	1	1	1	2	3	1	2	2	1	1	3
10	30	2	2	1	2	2	2	2	2	2	1	1	2
12	33	3	3	3	1	2	1	4	1	2	1	1	2
14	32	1	1	3	2	2	2	2	3	2	1	1	0
15	27	1	1	3	2	2	3	4	0	0	0	2	2
16	62	3	3	3	2	2	1	2	1	0	1	1	0
18	26	2	2	3	1	2	2	1	1	0	1	2	3
19	51	3	2	3	3	2	3	1	2	1	1	1	2
20	28	3	3	2	3	2	3	1	2	2	1	1	2
21	60	2	2	2	3	2	3	4	2	0	0	1	1
24	32	1	1	2	3	2	3	2	2	2	1	1	2
25	13	1	1	3	2	2	2	1	1	1	1	2	0
26	33	2	2	3	3	3	1	4	1	1	1	1	3
27	66	1	1	3	2	2	1	1	1	0	1	2	2
28	32	2	2	3	2	2	1	1	3	0	1	1	0
29	33	1	2	3	2	1	1	2	0	0	1	1	0
31	32	3	3	3	2	2	2	1	2	1	0	2	2
32	39	2	2	3	2	2	1	2	2	2	1	2	2
33	24	1	1	3	1	2	1	2	2	2	1	2	0
34	50	1	1	3	3	3	2	1	0	0	0	2	3
35	21	1	1	3	2	2	1	1	0	0	0	0	0

(Boys n = 27)

TABLE A 30 RAW SCORES for tests used in Part III of research

(Girls n = 22)

Subject's No.	Make a Picture Test I	II	III	Q.1	Q.2	Q.3	Q.4	Punishment	Recall A	Recall B	Recall C	Praised	Blamed
	Var. 26	27	28										
36	36	2	2	3	2	2	1	3	2	2	1	2	2
37	45	2	1	3	2	3	1	2	2	1	0	1	3
40	48	2	2	3	2	3	3	1	1	1	1	2	1
42	23	2	2	3	1	2	3	1	2	0	0	2	2
51	46	1	1	2	2	2	2	1	2	1	1	2	2
52	39	2	2	3	2	2	1	1	1	1	1	1	1
57	6	1	1	3	2	2	1	1	2	1	1	1	0
59	29	1	1	3	2	2	3	3	1	2	0	2	1
60	35	2	2	3	2	2	1	4	2	1	1	1	2
61	41	2	2	3	2	3	3	3	1	1	0	2	2
62	15	3	2	3	2	2	1	4	2	1	1	1	2
63	61	3	3	3	2	2	1	1	2	2	1	2	2
65	31	3	2	3	2	2	1	2	2	1	1	1	2
66	25	2	2	3	3	3	1	2	1	1	1	2	2
70	43	2	1	3	2	2	1	4	1	0	1	1	2
71	47	1	1	2	2	2	1	2	2	2	1	2	2
72	14	2	1	3	3	3	1	3	2	2	2	2	1
73	38	2	2	2	2	2	1	4	3	2	1	2	3
74	55	2	1	3	2	2	1	1	1	2	0	2	2
77	21	2	2	3	1	3	1	1	3	1	1	1	0
78	34	3	3	3	2	2	2	3	1	0	1	2	2
79	64	2	1	3	3	3	3	4	0	0	0	2	3

(Girls n = 22)

READY REFERENCE TO

SITUATIONS OF THE GIVING SERIES

OPEN SITUATIONS

1. Wounded dog
2. Man in the river
3. Man on the bus
4. Man worried
5. Jammed door
6. School-child

FIXED SITUATIONS

7.	(Ar)	Minding the shop
8.	(Aa)	Man in the mountains
9.	(Aa)	Refugees
10.	(Ar)	Girl on skis
11.	(Aa)	Orphaned child
12.	(Ar)	Helping child with task
13.	(O)	Aged father
14.	(Aa)	Sick wife
15.	(Aa)	Gift to the King
16.	(Aa)	War damage
17.	(Aa)	Money for schooling (Students only)
18.	(Ar)	Loading timber (Adults only)
19.	(O)	Money for cinema (Adults only)

Ar - Help requested by recipient
Aa - Help asked for by another on R's behalf
O - D is left to offer

PAGE MARKER

READY REFERENCE TO

SITUATIONS OF THE RECEIVING SERIES

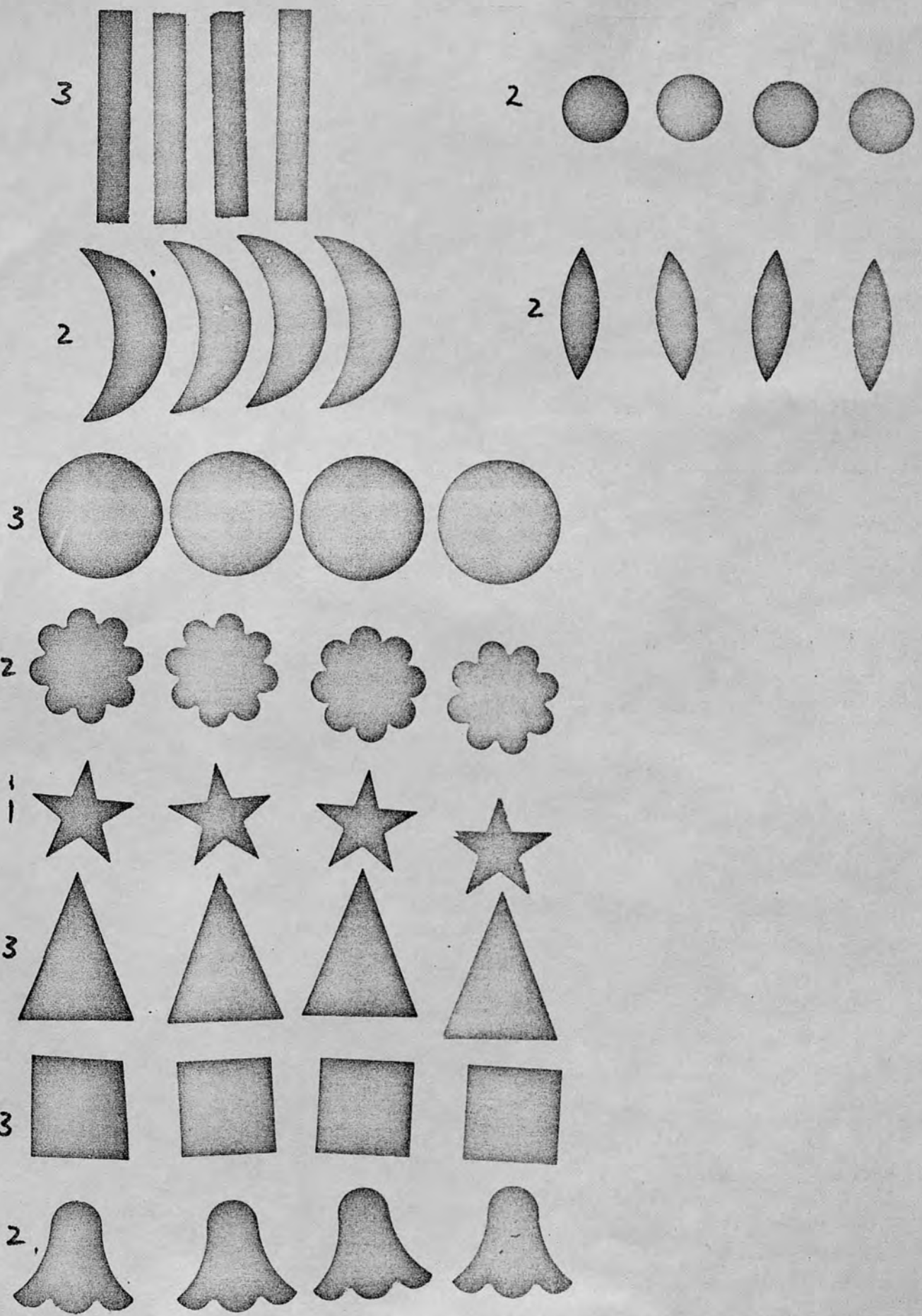
1.	(A)	Bereavement
2.	(A)	Burnt house
3.	(Om)	Money from brother when ill
4a.	(A)	Drowned horse (Adults only)
4b.	(Om)	Drowned horse (Students only)
5.	(A)	Help with job when ill
6.	(Om)	Heavy sack
7.	(Om)	Aged father
8a.	(Oe)	Unemployment
8b.	(A)	Unemployment
9.	(Om)	Education
10.	(A)	Danger
11.	(Om)	Amusement (Skis from uncle)
12.	(Om)	Useless help (Adults only)
13.	(A)	Handicapped boy (Students only)
14.	(Om)	Cutting wood (Students only)
15.	(Oe)	Hospitality on journey (Students only)

Oe - Offer expected?
Om - Offer made
A - Help to be asked for

PAGE MARKER

STEEN, C.A.
Ph.D

X STICKY SHAPES CREATIVITY TEST



STEEN. C. A
Ph. D

BOOKLET 2

Name_____ _____ Date _____

Here is a short list of words which have more than one meaning.
An example of a word with more than one meaning is the word

BARK

Now this can either mean the BARK of a tree
or the BARK of a dog
or the BARK of a seal
or sometimes boats are called BARKS so here I have thought of 4 meanings.

Now I want you to look at the following words and write down as many meanings as you can think of for each word.
- Don't worry about spelling.

1. Bit_____

_____

_____

2. Duck_____

_____

_____

3. Pitch_____

_____

_____

4. Port_____

_____

_____

5. Punch_____

_____

_____

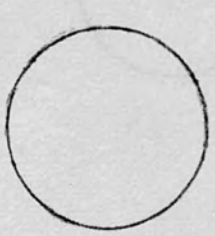
6. Sack_____

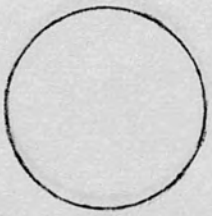
_____

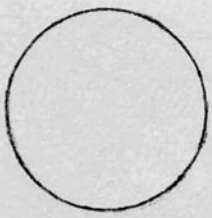
_____

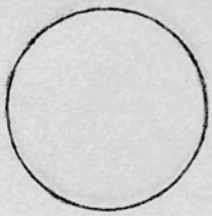
Activity 3. CIRCLES

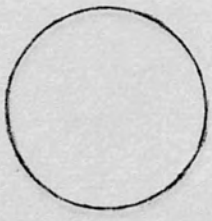
In ten minutes see how many objects or pictures you can make from the circles below and on the next page. The circles should be the main part of whatever you make. With pencil or crayon add lines to the circles to complete your picture. You can place marks inside the circles, outside the circles, or both inside and outside the circles - wherever you want to in order to make your picture. Try to think of things that no one else will think of. Make as many different pictures or objects as you can and put as many ideas as you can in each one. Make them tell as complete and as interesting a story as you can. Add names or titles below the objects.

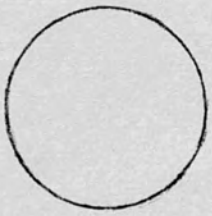












Here you will see a picture I want you to look at this picture and tell me a story about it. It need only be a short story but I want it to be about what is going on in this picture, and what happens afterwards.

You have 10 minutes.

Now I want you to play a game. In the envelopes attached to this piece of paper you will find 100 assorted shapes with which I want you to make an interesting picture.

I want you to stick them on the next blank sheet and make up a picture with the title "Mouse in danger".

A very important part of this picture will be the writing which you put on your picture to tell me about your ideas. You can label the objects in the picture, describe what is about to happen and do whatever you like with your pencil to make the picture more interesting and unusual.

You can use all of the pieces of paper or only a few. The most important point to bear in mind is that the picture should be original and interesting.

Would you please read this short story.

Jeremy and Jack, two nine year old boys had gone to the park to play football, and after kicking the ball about for a while, they decided that they would look for something more exciting to do.

On their way to the park that morning they had seen a frozen pond in the garden of a deserted house and they would surely find something exciting to do there. They arrived at the pond and gazed at the glistening ice expectantly. The aim of their first game was to throw pebbles from one side of the pond to the other. Then Jack thought it might be more fun to slide the ball across the ice to Jeremy, instead of the pebble. At the second throw however, it got caught in a pile of protruding sticks, right in the centre of the pond.

They both crept onto the ice warily but on the third step there was a loud crack and both boys sank waist deep into the freezing water. They waded out and set off smartly for home with their teeth chattering.

Jeremy arrived home breathless and quickly told his mother what had happened. His father who had heard the commotion rushed into the kitchen. When he found out how his son had got his soaking, he was furious and beat him with his slipper. He shouted, "I'm sick and fed up with the way you're always looking for trouble. That beating should teach you to behave yourself and not go around looking for mischief. Now go upstairs and go to bed".

When Jack arrived home his parents were eating lunch and were surprised to see Jack in such a state. They heard his tale of woe and told him to get upstairs and change quickly before he caught a cold. Jack's mother sighed when she thought of the washing she'd have to do.

When Jack rejoined them his father said "I hope that soaking has taught you a lesson, my boy. Next time you're looking for adventure make sure that you aren't risking your life. That pond might have been very deep. Sit down now and have your lunch".

Now that you've read the story, I should like you to tell me what would have happened if you had had a soaking instead of Jeremy and Jack. Would your parents have treated you like Jeremy's or like Jack's or in another way altogether. Could you say briefly in the space below what would have happened to you.

Now I would like you to re-tell the story you read earlier, in your own words.

Now could you look at the following sentences below and put a circle around the sentence ending which is most like what you would do.

I would like you to be as honest as you can. I'm interested in what you would really do in each situation, not what you think you ought to do.

Could you circle the "sentence endings" as quickly as possible please.

1. If you were punished by your parents for something you didn't do, would you:

   a) feel angry but not tell anyone what you felt.

   b) make it quite clear to your parents that you were angry because you hadn't done it.

   c) agree with what your parents had done to you saying that they knew what was good for you.

2. Your parents go away for three weeks holiday and you are left at home with a very strict aunt.

Would you:

a) Say they need a rest. I'm pleased that they have gone away.

b) Be upset because you felt you needed a holiday too, but you tried to make the best of your time at home.

c) Be so angry with them that you sulked and played up your aunt for the whole of the holiday.

3. You have found out that your older sister Jane has been given a present by your grandmother and you haven't. Do you:

a) Feel hurt but don't say anything to anyone.

b) Say to yourself how nice for Jane to have a present. She deserves one.

c) Have a cry and tell your grandmother that she spoils your sister and it's not fair.

4. Your parents want you to go and visit a boy you know, who is in hospital. You've never really liked this boy and you didn't want to go.

Do you:

1) Say No I really can't face doing that. I don't like him and he knows it.

2) Go to the hospital grudgingly saying that you weren't really feeling like it.

3) Visit the boy and pretend to enjoy it.

I want to find out a bit about your life at home now. First of all I would like you to try to remember when your parents were last pleased with you and praised you. I want you to try and remember when this was, what date, what time of day, morning, afternoon or evening and who praised you and what for. Could you fill in your answers in the spaces below:

a) Day:

b) Time:

c) Who praised you:

d) What had you done:

Now I want you to try and remember when you last had a row or argument with your parents or got into trouble. Can you give me the date, time of day, whom you had a row with and why you'd got into trouble.

a) Day:

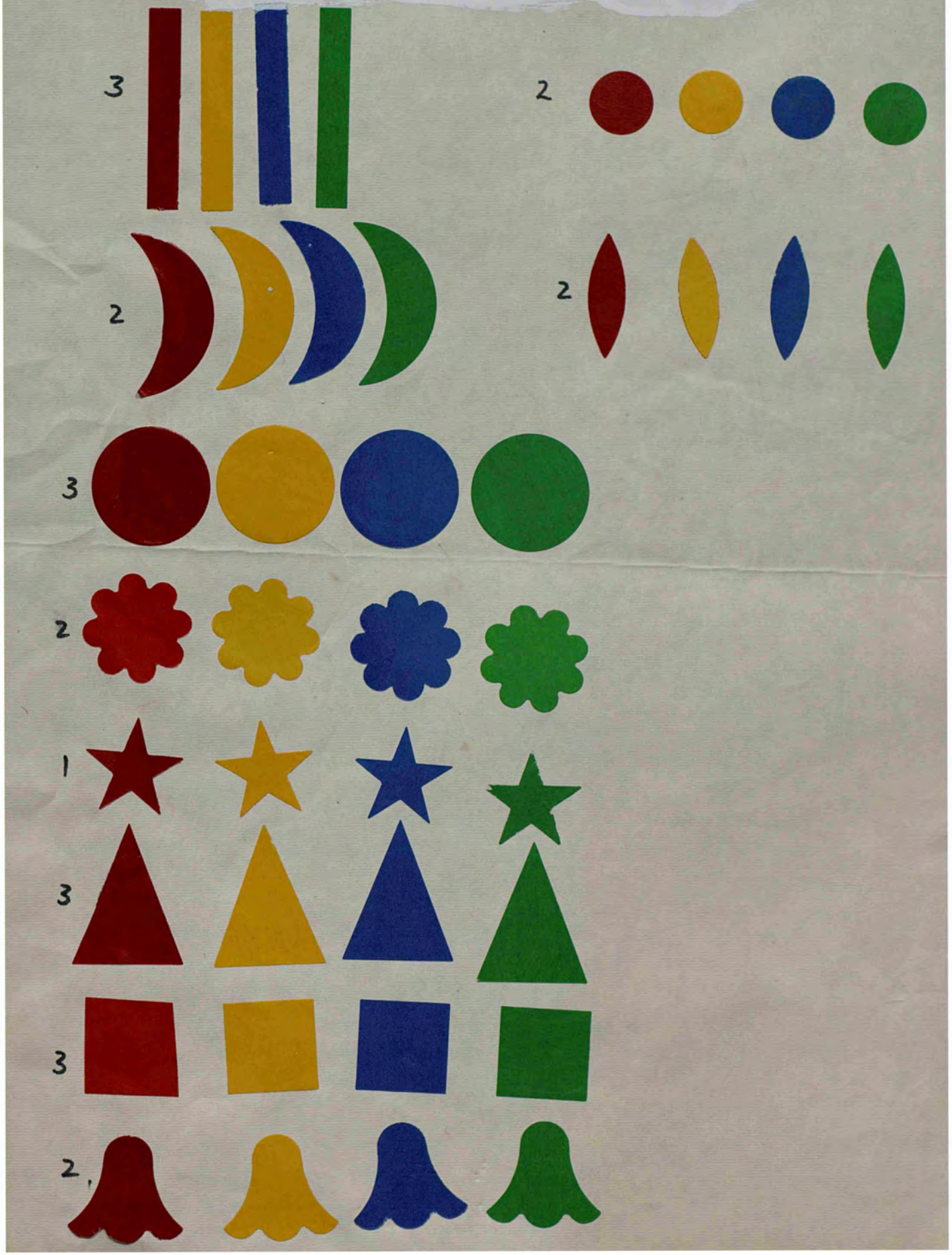
b) Time:

c) Who did you have a row with?:

d) What for:

STEEN, C.A.
Ph.D

X STICKY SHAPES CREATIVITY TEST



On the next page you will see 5 unfinished sentences. I want you to read each sentence and make up and write down an ending.
There is no right answer.
Write down the first thing that you think of,

1. Father says I must do my homework and I say.....

2. I want to go out and play and mother says.....

3. If I got a bad report from school then.....

4. My sister and I had a quarrel and .....

5. My father says I must go to bed and I say.....

Test 7. Guessing Game. (Approx. 10 minutes)

This game asks you to guess about a lot of things in our world. i.e. if you knew that most grown up men in the world are around 5 feet and 7 inches tall, you might guess that the tallest man in the world is 7 feet tall or 8 feet tall. And you might guess that the shortest man in the world is 4 feet tall or only 3 feet tall.

In this game you get a chance to guess about things like that. Why don't you just begin reading now, and draw a circle around the number you choose.

Most whales are about 65 feet long.

a. How long is the longest whale?

1. 69 feet
2. 150 feet
3. 76 feet
4. 90 feet

b. How short is the shortest whale?

1. 37 feet
2. 8 feet
3. 51 feet
4. 58 feet

Most dogs are about $3\frac{1}{2}$ feet long.

a. How long is the longest dog?

1. $4\frac{1}{2}$ feet
2. 4 feet
3. $5\frac{1}{2}$ feet
4. $6\frac{1}{2}$ feet

b. How short is the shortest dog?

1. 1 foot
2. $\frac{1}{2}$ foot
3. $2\frac{1}{2}$ feet
4. 2 feet

Most roads are about 18 feet wide.

a. How wide is the widest road?

1. 51 feet
2. 27 feet
3. 20 feet
4. 36 feet

b. How narrow is the narrowest road?

1. 16 feet
2. 7 feet
3. 2 feet
4. 11 feet

. Most windows are about 34 inches wide.

a. How wide is the widest window?

1. 110 inches
2. 36 inches
3. 43 inches
4. 57 inches

b. How narrow is the narrowest window?

1. 3 inches
2. 21 inches
3. 12 inches
4. 28 inches

Most people spend about 55 minutes out of a whole day eating meals.

a. What is the longest time anyone spends eating meals in a whole day?

1. 60 minutes
2. 105 minutes
3. 240 minutes
4. 73 minutes

b. What is the shortest time anyone spends eating in a whole day?

1. 3 minutes
2. 29 minutes
3. 47 minutes
4. 11 minutes

BOOKLET 1. 1. STEEN. C.A Ph.D

UNUSUAL USES (Bake Bean Tins)

Most people throw their empty bake bean tin away but they have thousands of interesting and different uses as you can think of. Do not think of just one size of baked bean tin. You may use as many baked bean tins as you like for each use you think of.

I want you to think of as many different uses

Do not just think of the uses you have seen or heard about; think about as many possible new uses as you can.

1. _____

_____

2. _____

_____

3. _____

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4. _____

_____

5. _____

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6. _____

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7. _____

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8. _____

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9. _____

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10. _____

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11. _____

_____

12. _____

_____

13. _____

_____

14. _____

Activity 5: UNUSUAL USES (Match Boxes)

Most people throw their empty match boxes away but they have thousands of interesting and different uses as you can think of. Do not think of just one size of matchbox. You may use as many boxes as you like for each use you think of. Do not just think of the uses you have seen or heard about; think about as many possible new uses as you can.

1. _____

_____

2. _____

_____

3. _____

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4. _____

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5. _____

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6. _____

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7. _____

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8. _____

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9. _____

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10. _____

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11. _____

_____

12. _____

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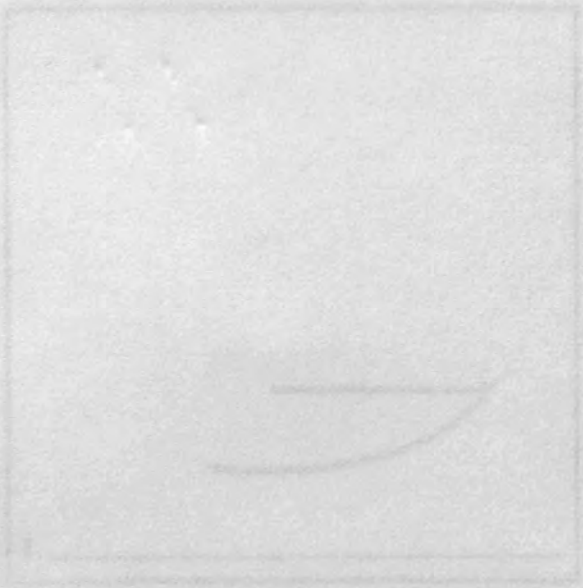
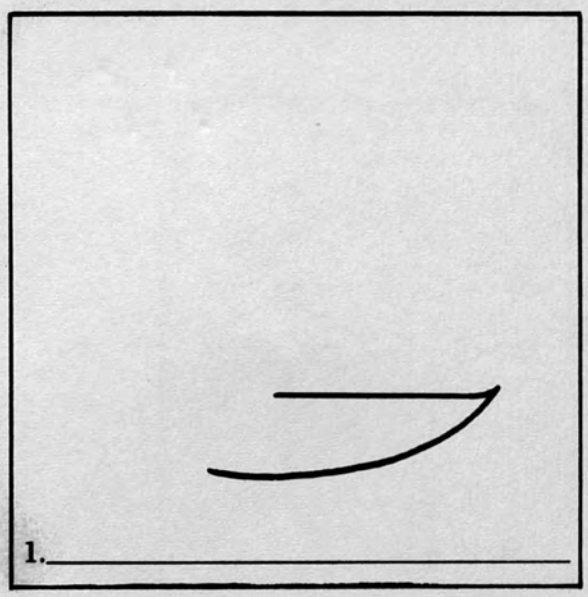
13. _____

_____

14.

By adding lines to these figures on the next ~~two~~ pages you can draw some interesting objects or pictures.
Try to think of some picture or object that no-one else will think of. Try to make it tell as complete and as interesting a story as you can by adding too and building up your first idea.
Make up an interesting title for each of your drawings.

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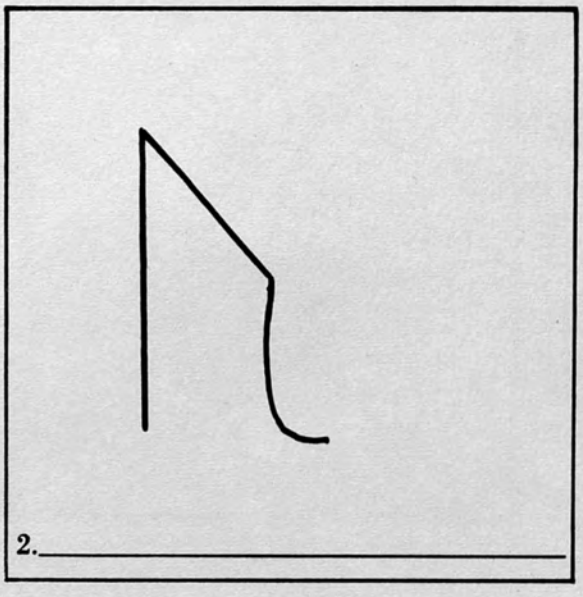

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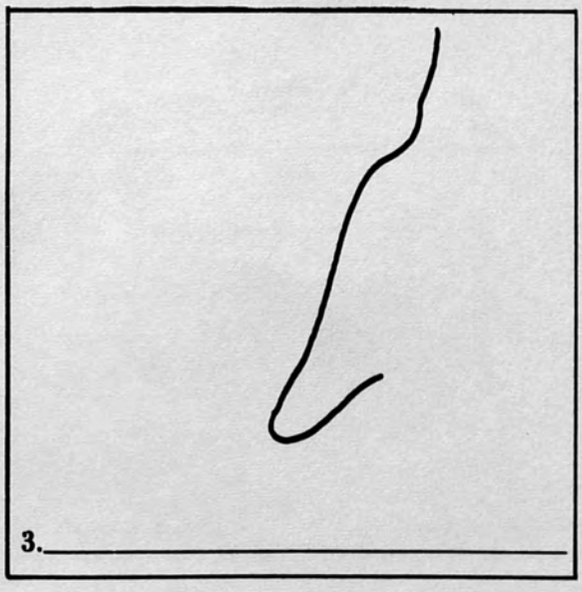

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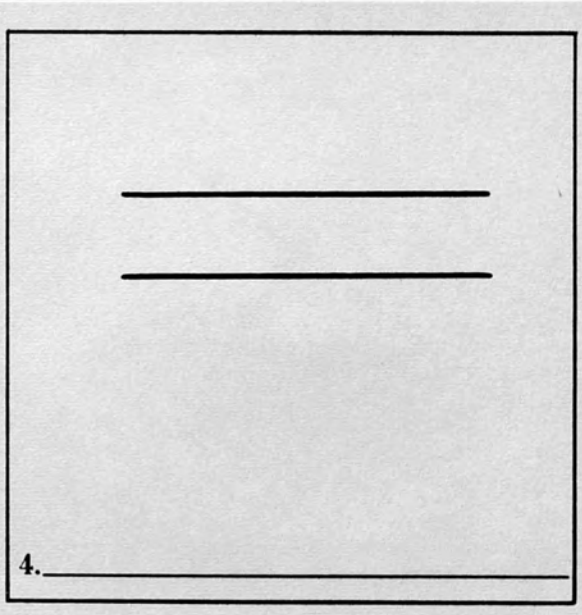
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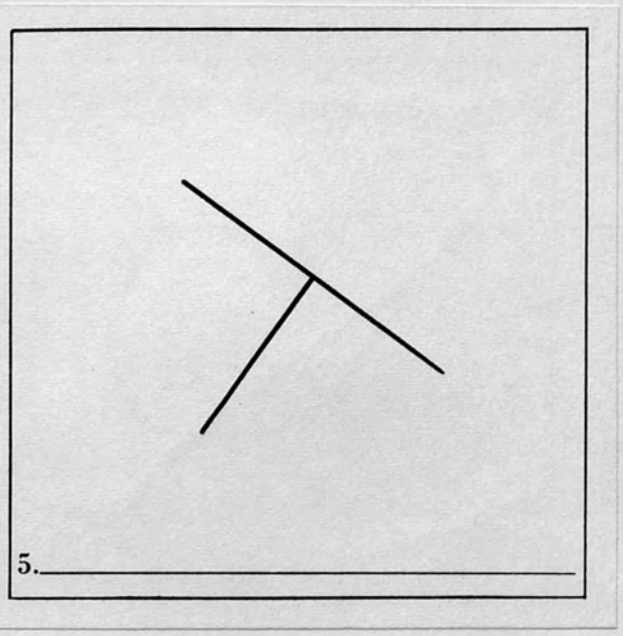

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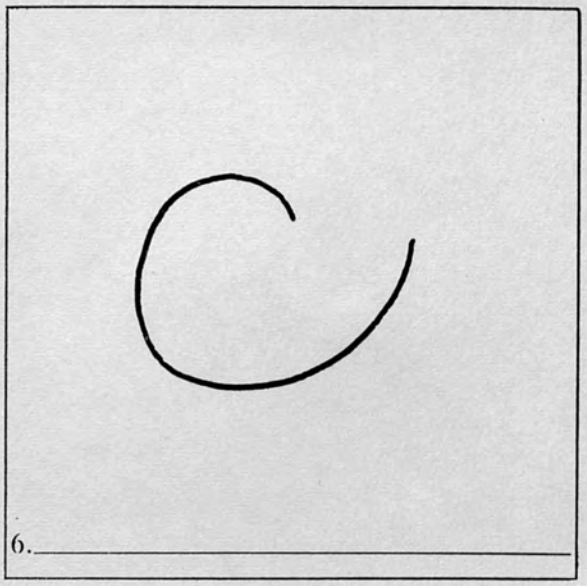

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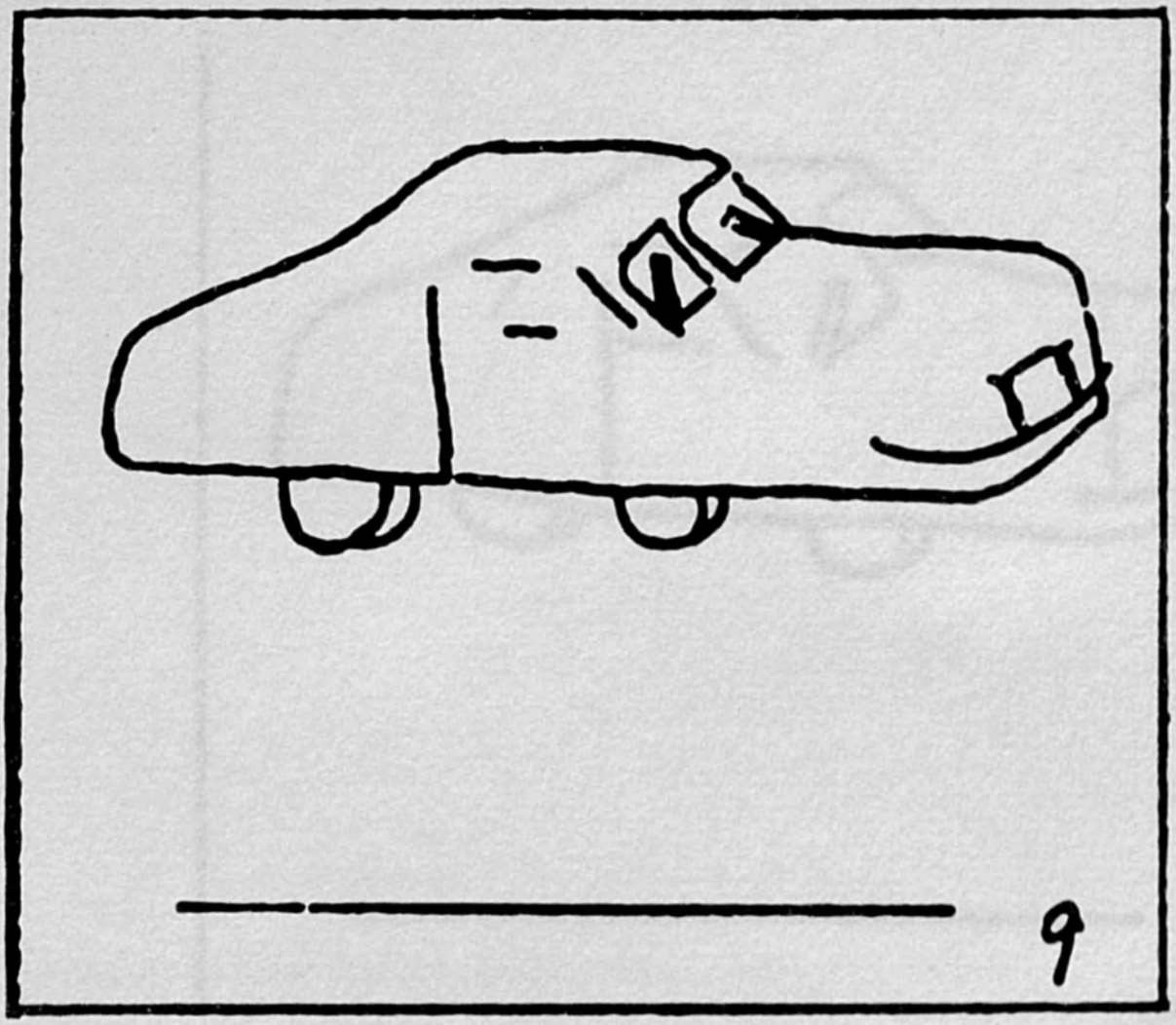

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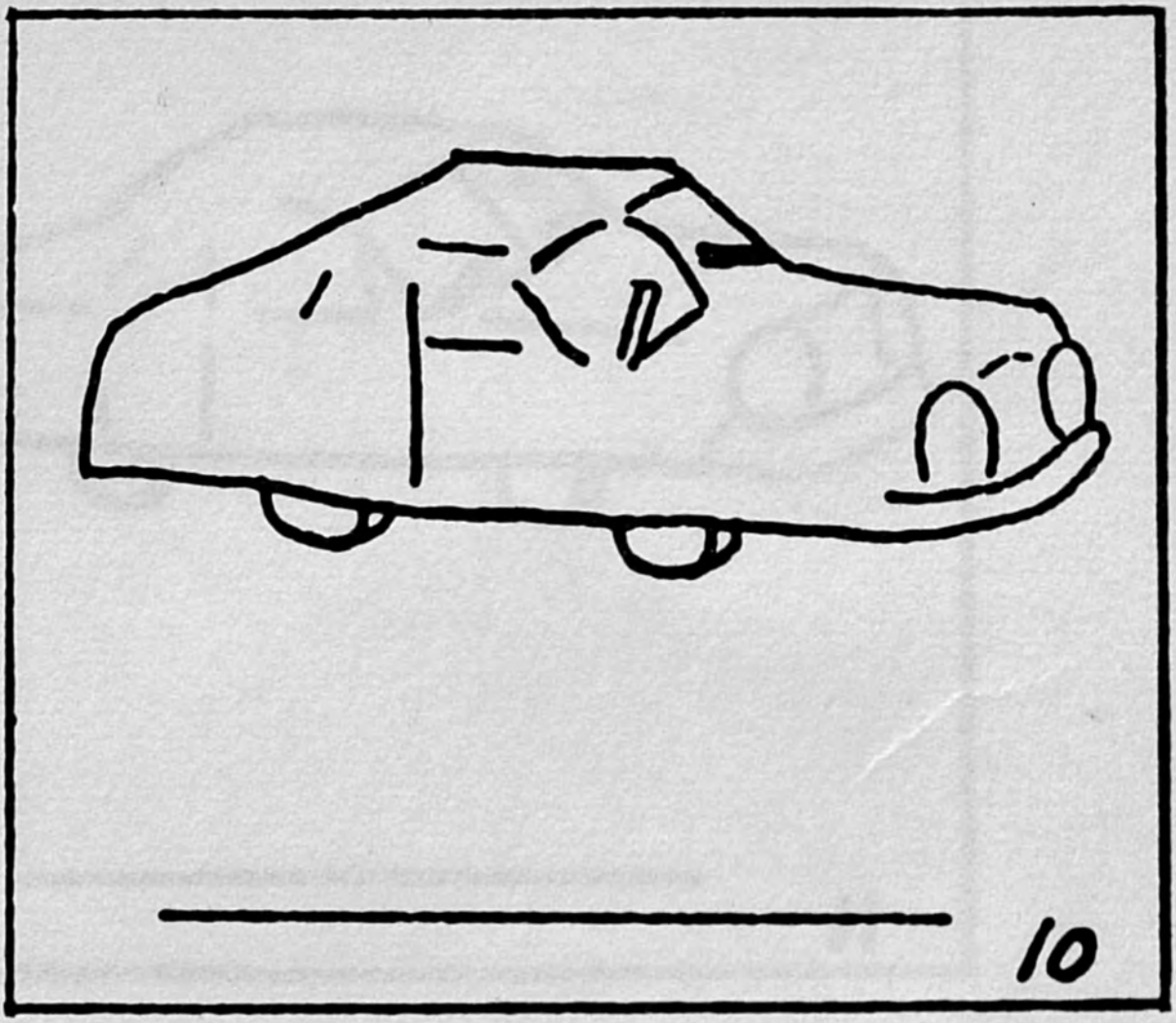

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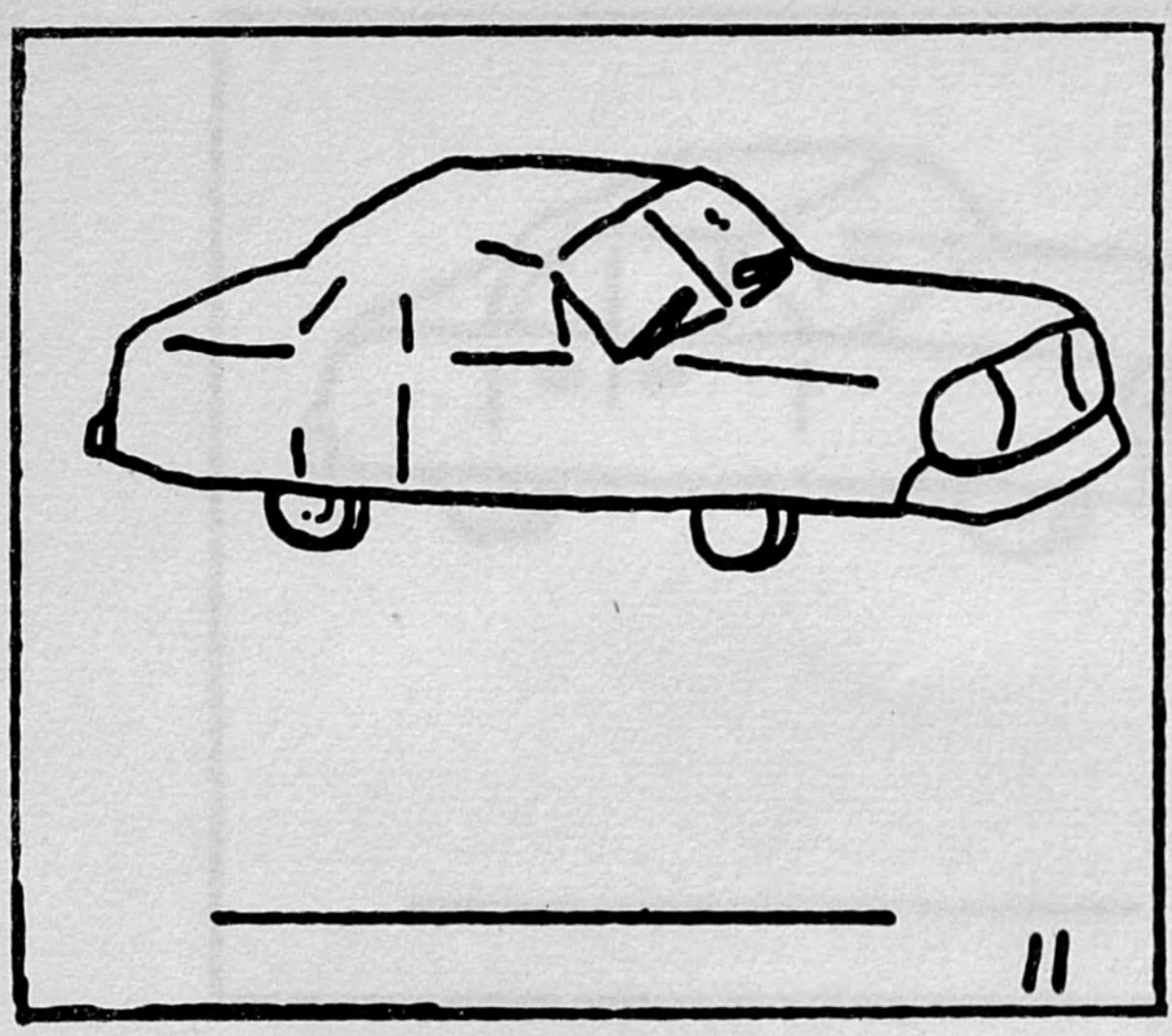

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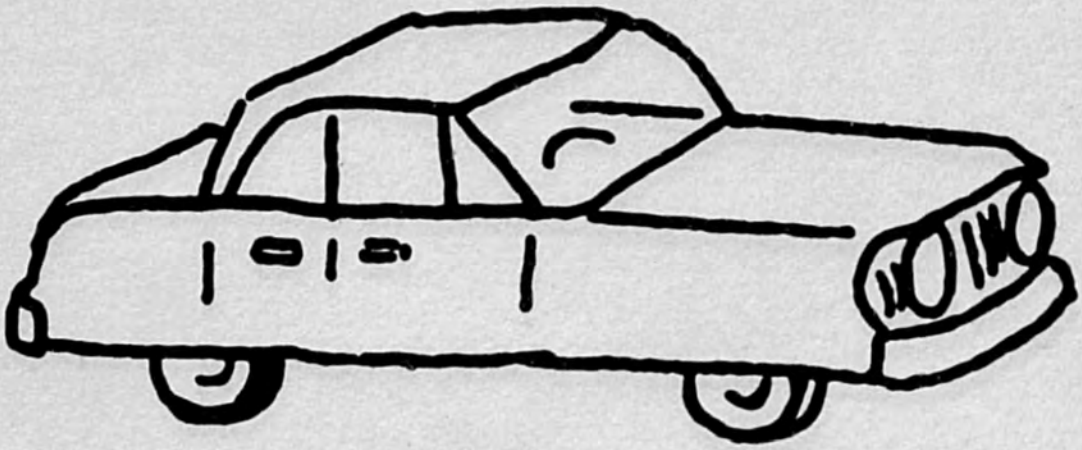

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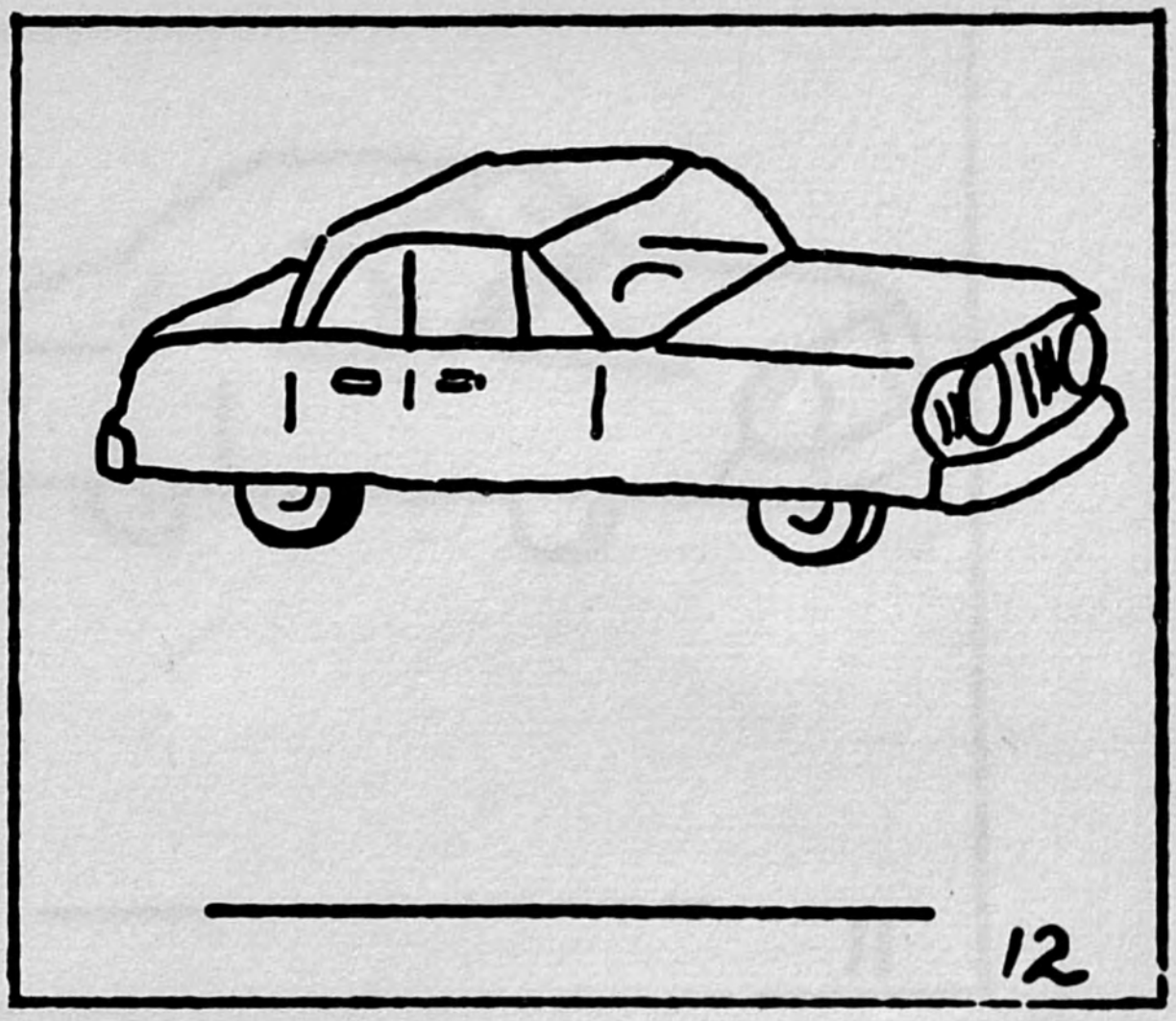

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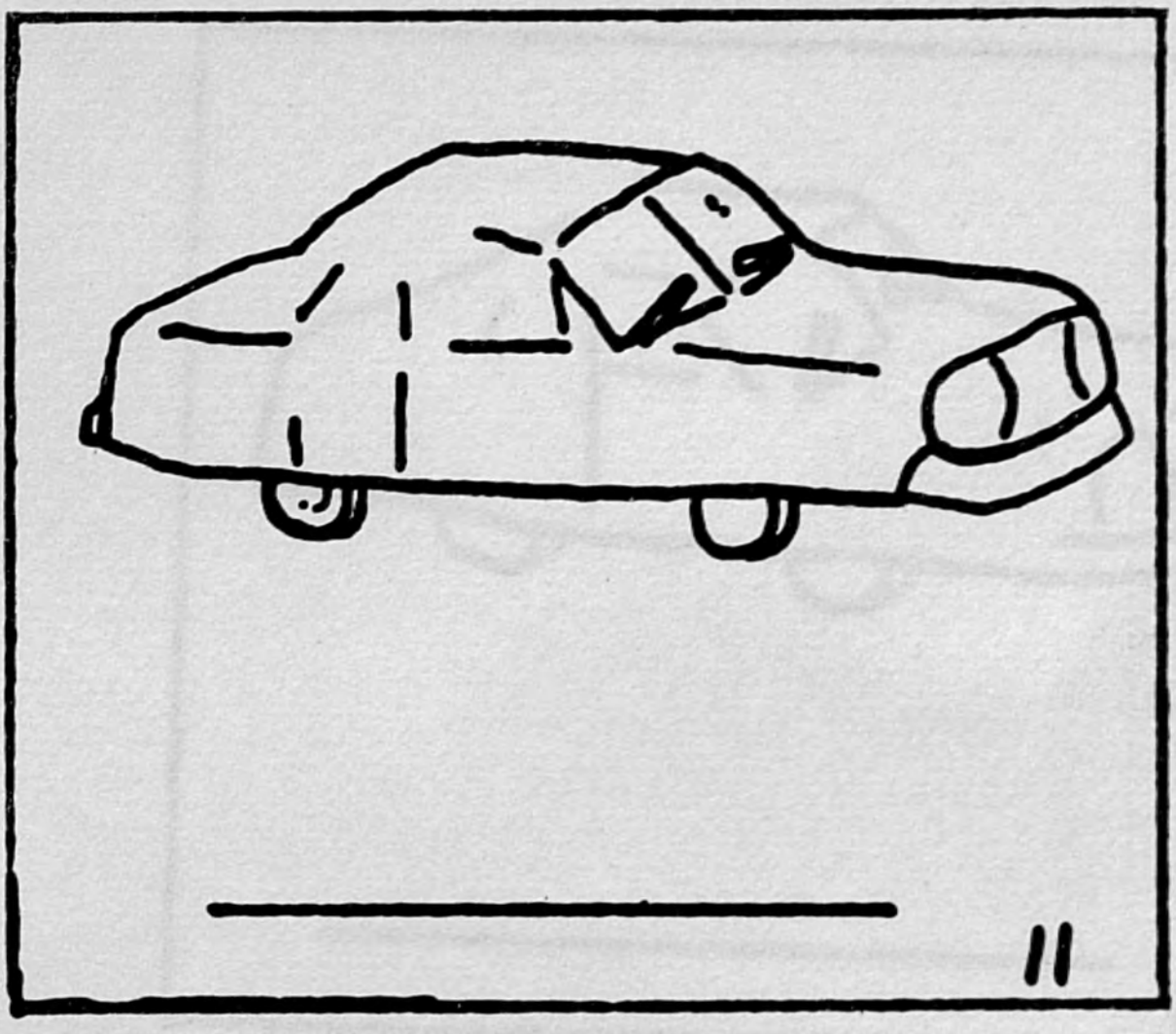

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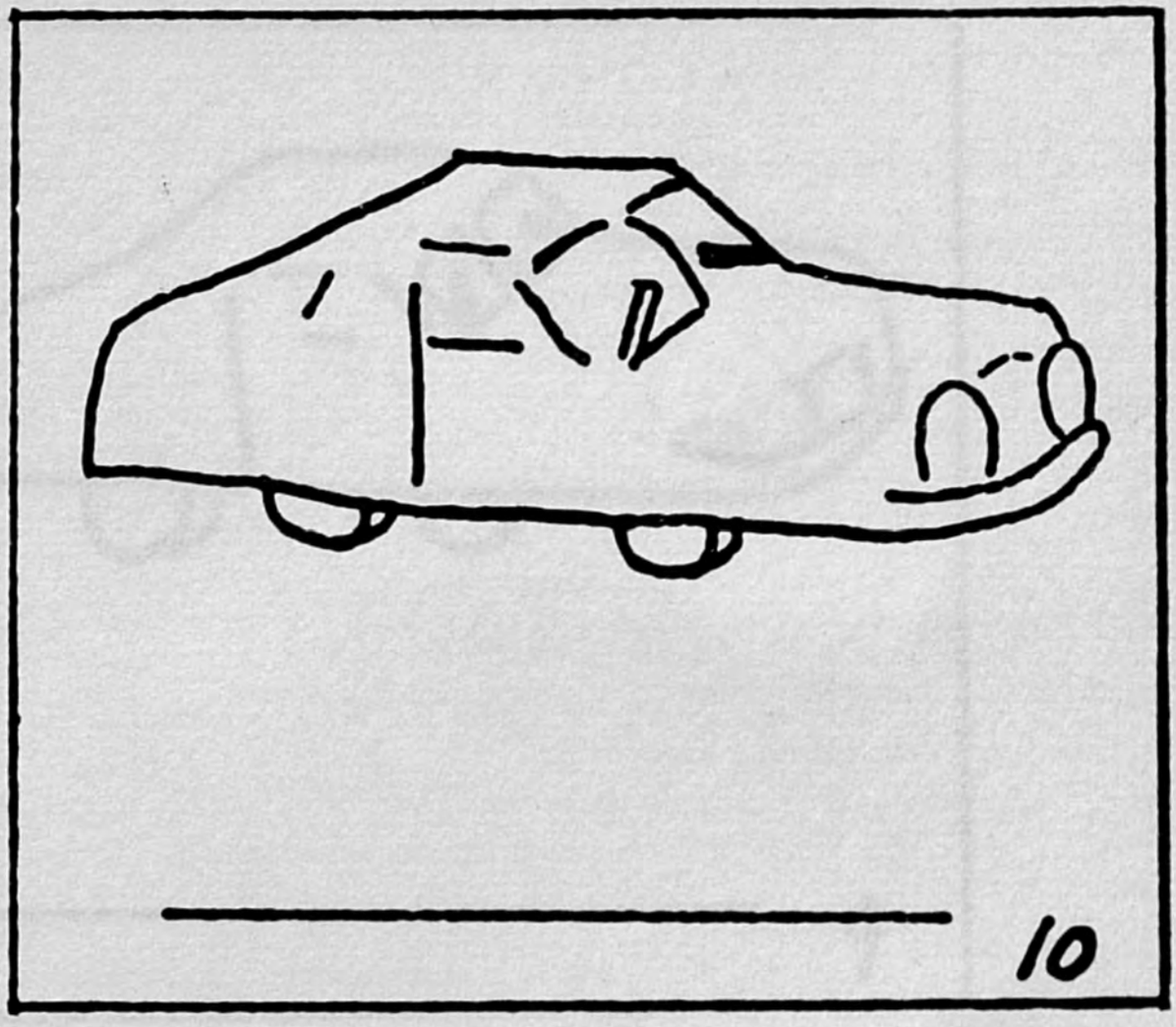

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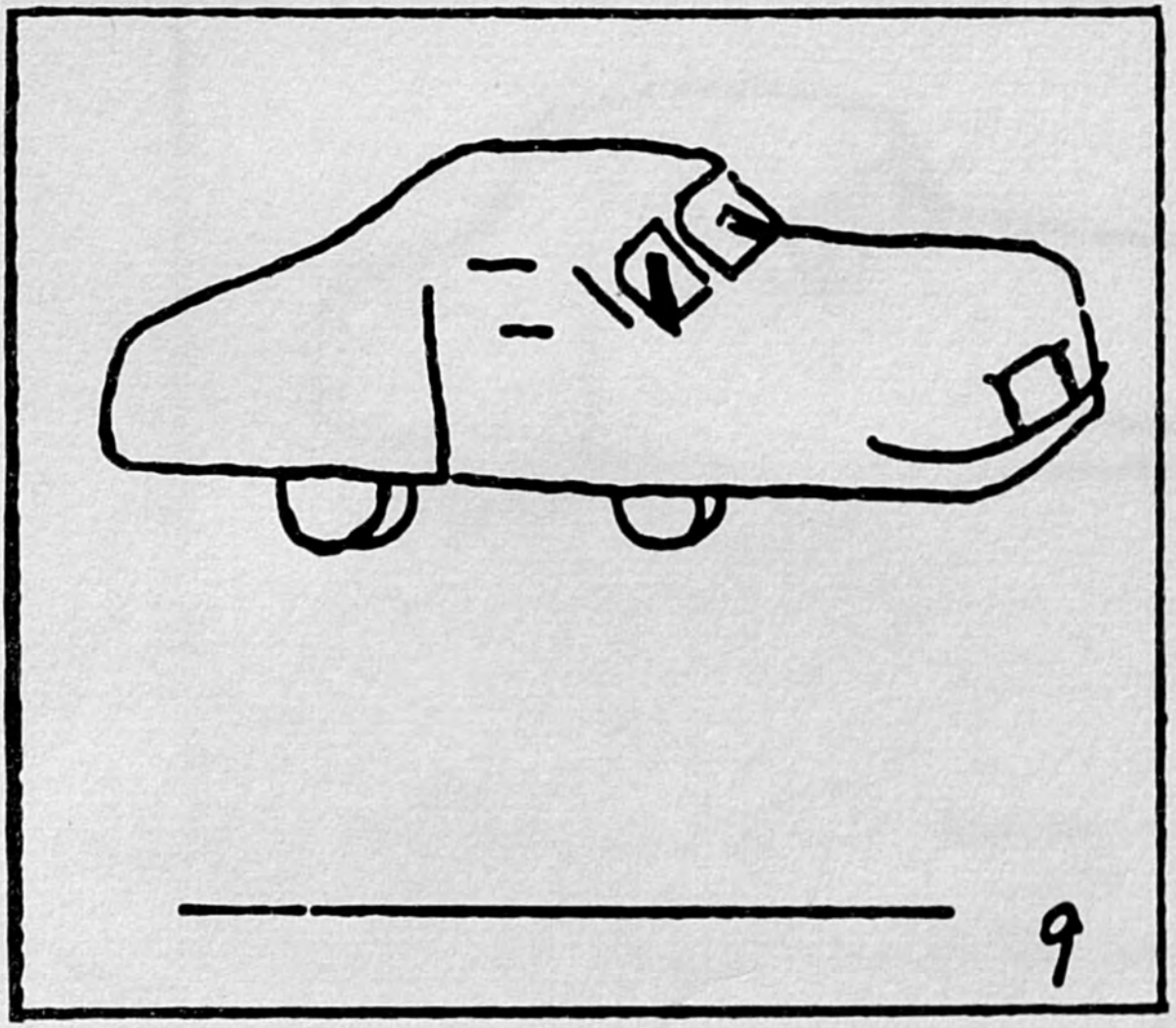

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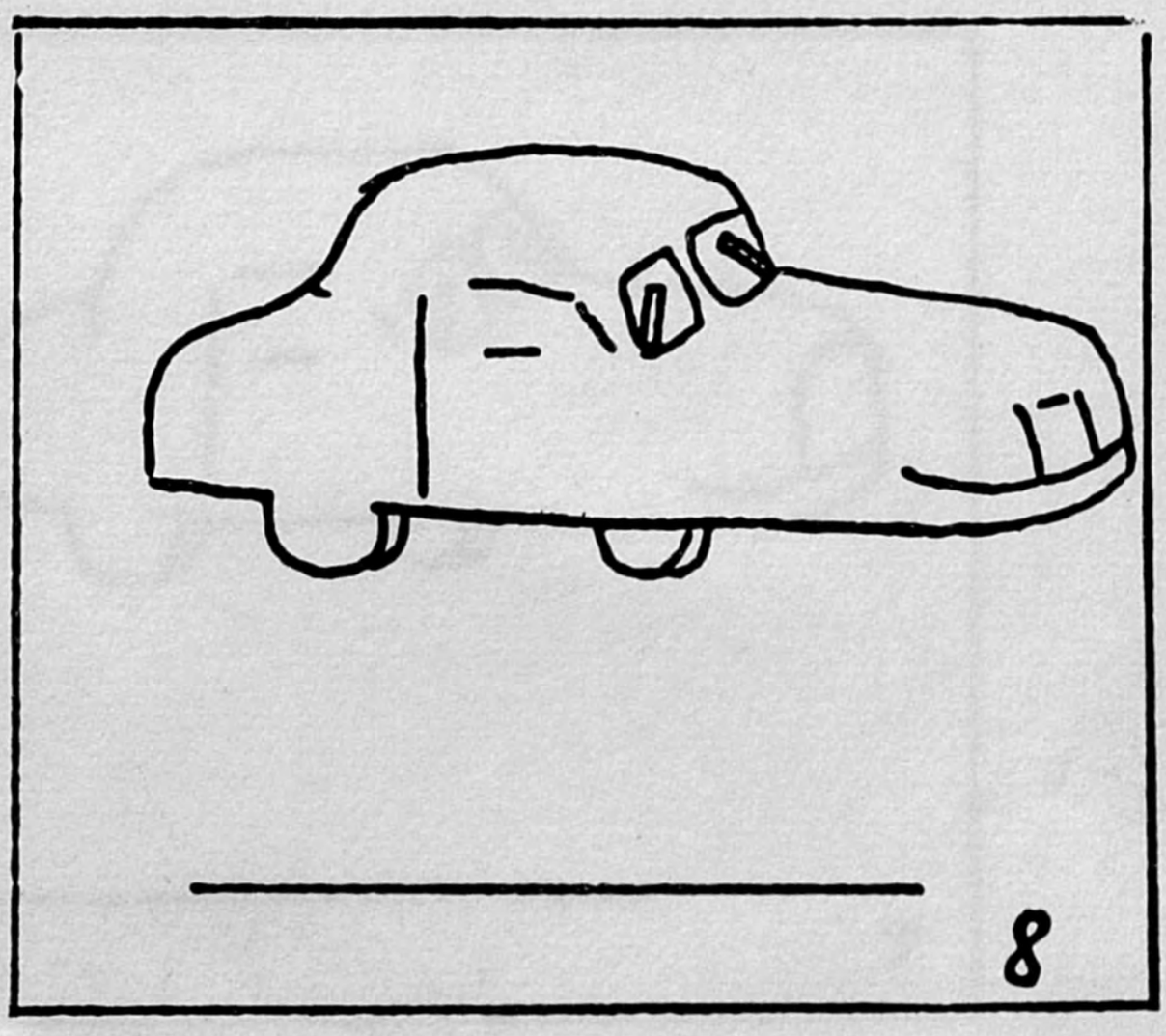

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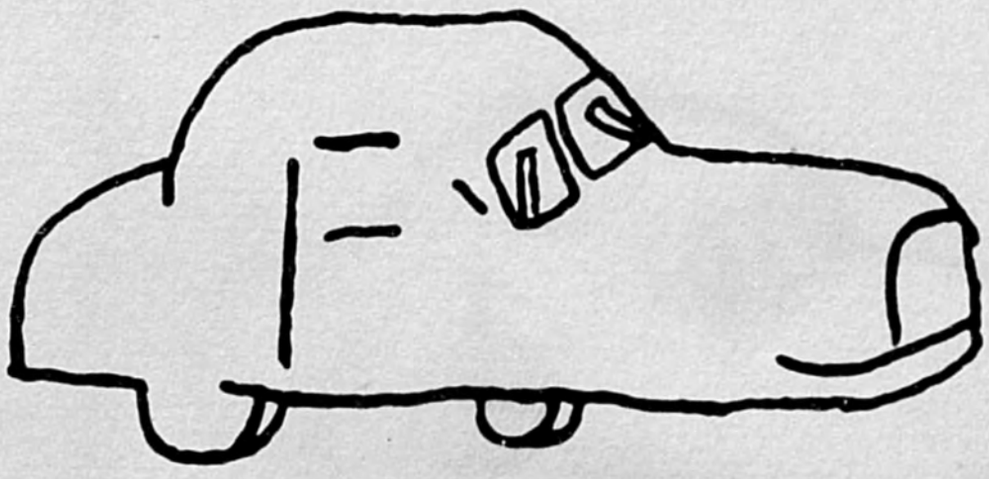

7

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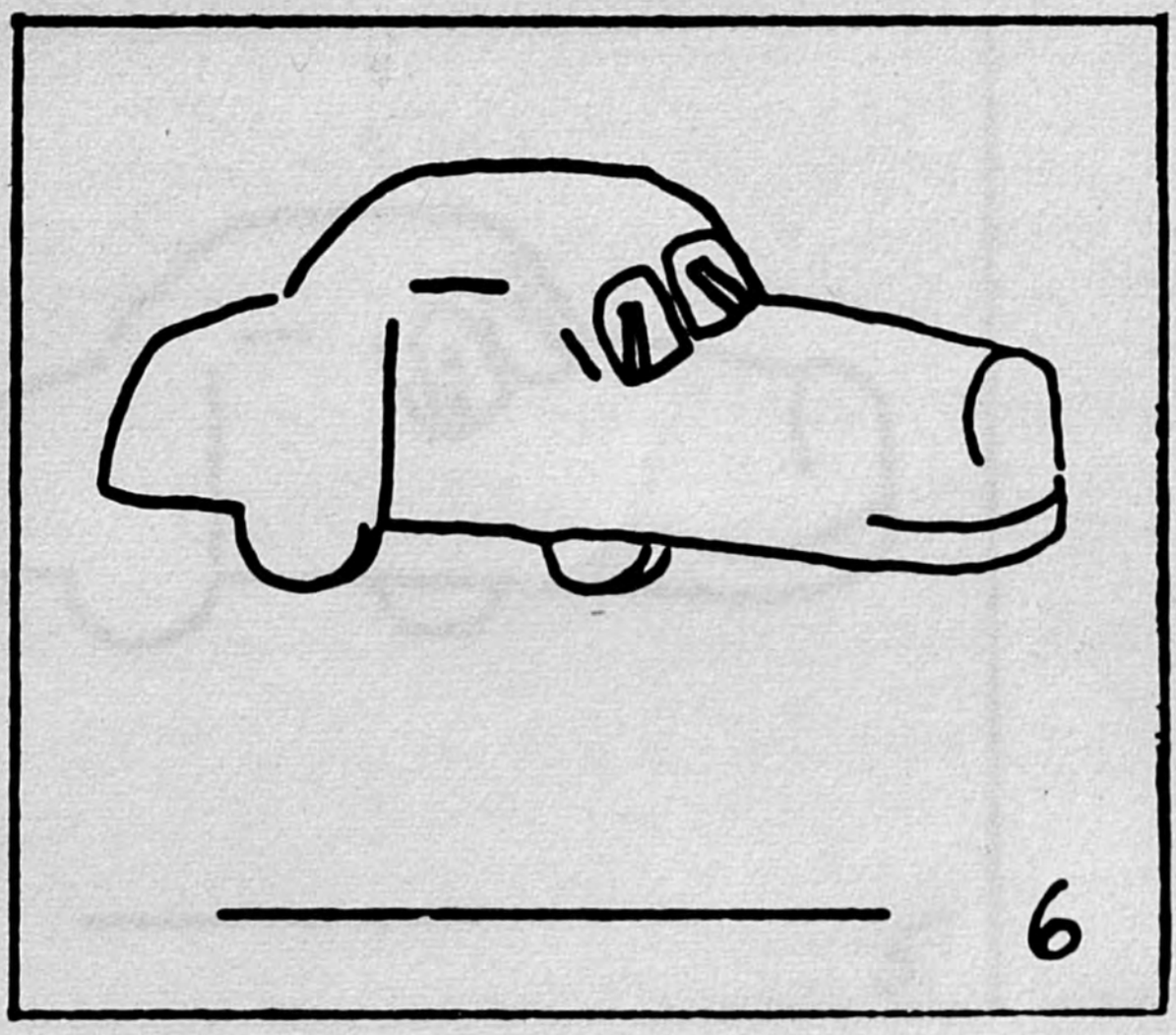
Booklet A.

Steen C.A
Ph. D

You are now going to see some pictures: and each one will be different. I want you to look hard at each picture and on the line below the picture I want you to write what you think the picture is.



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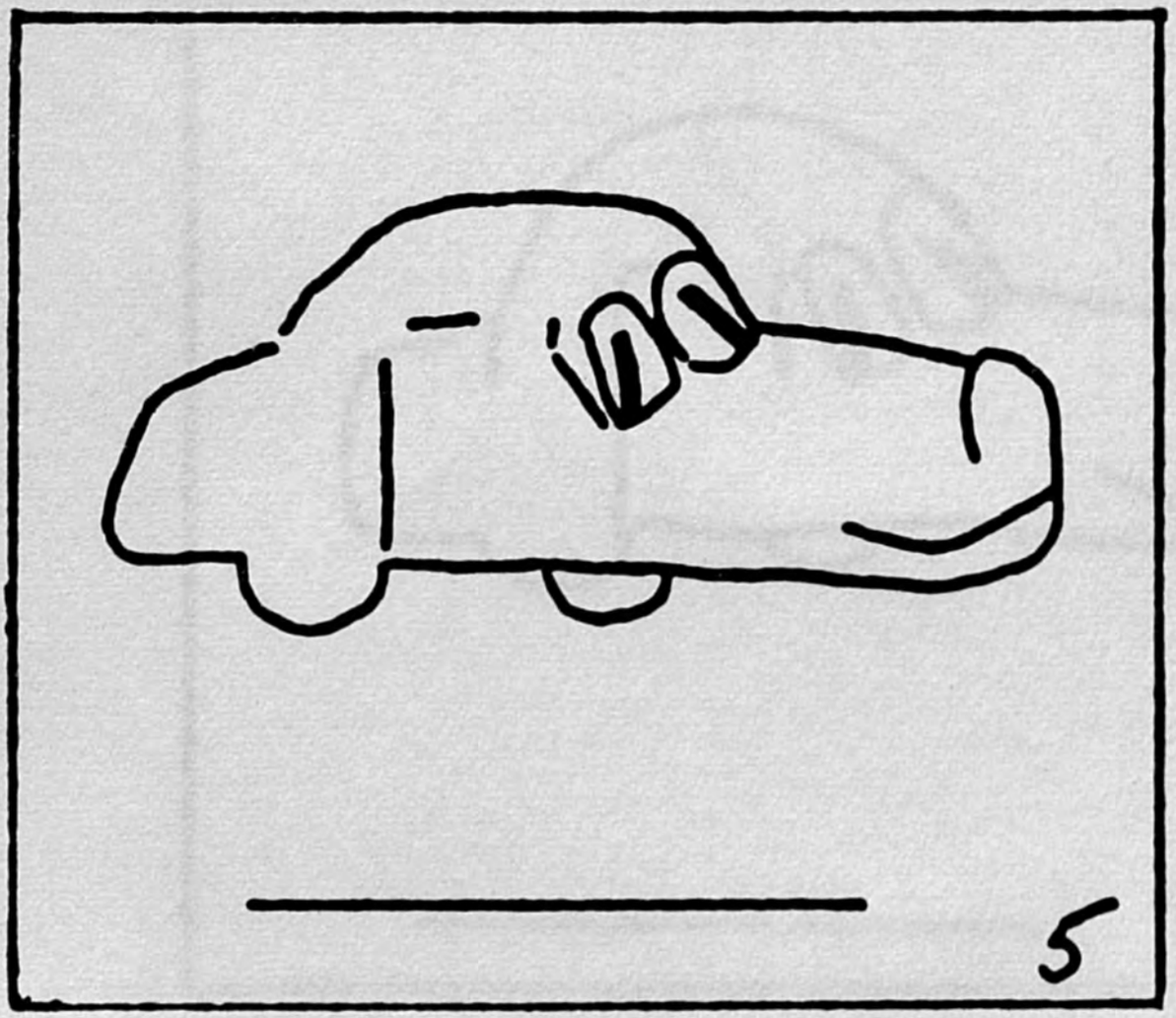
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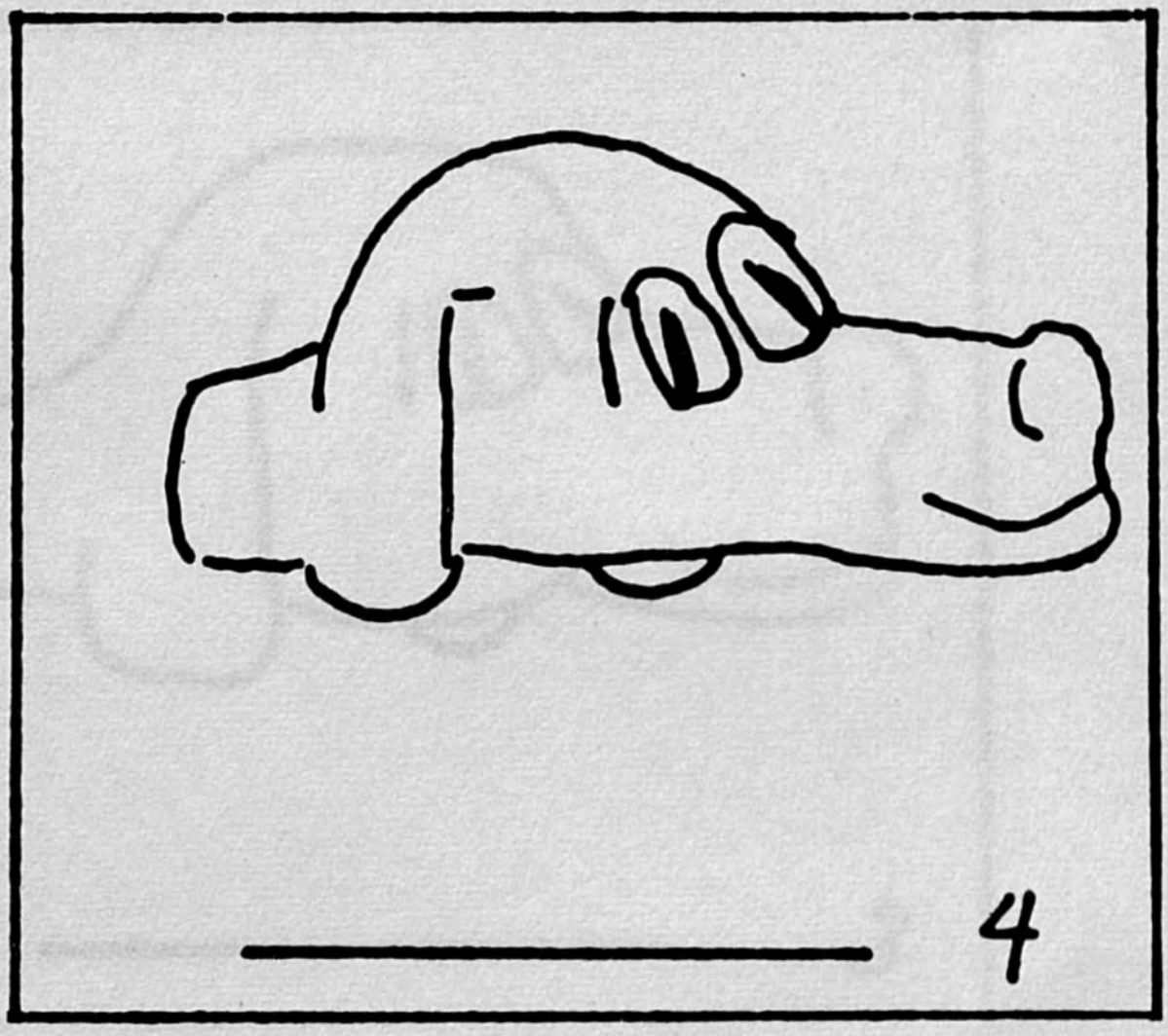
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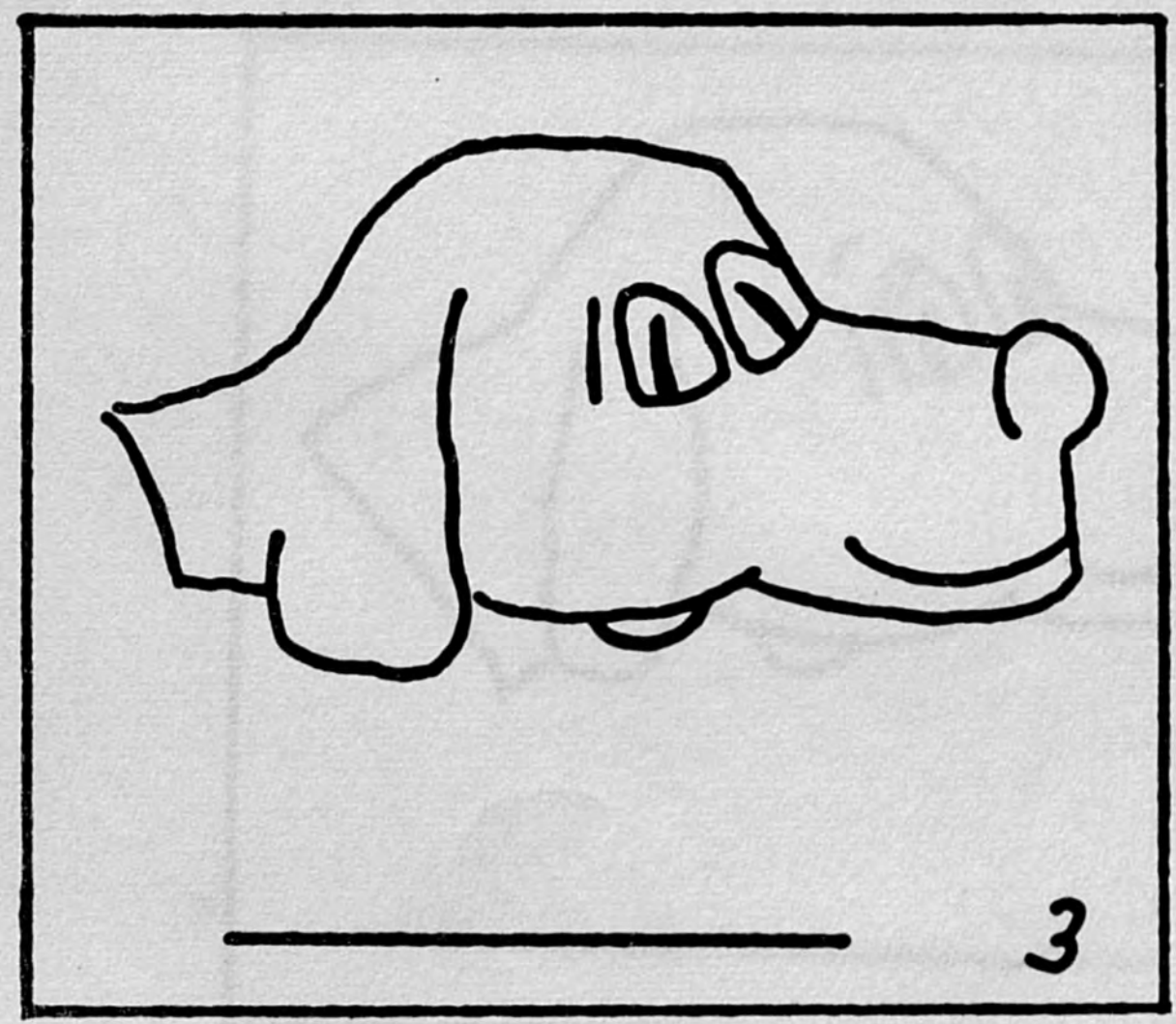

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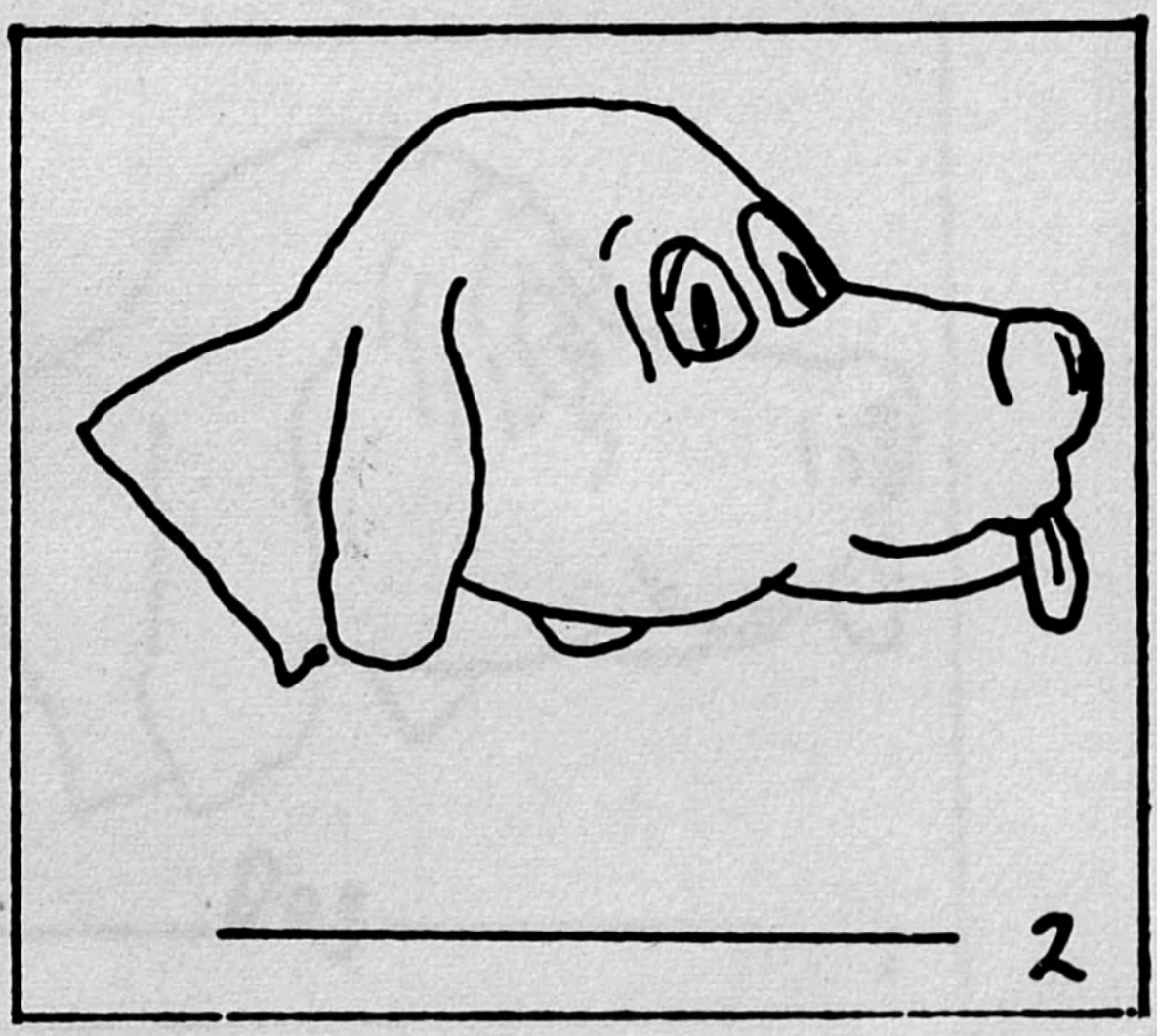

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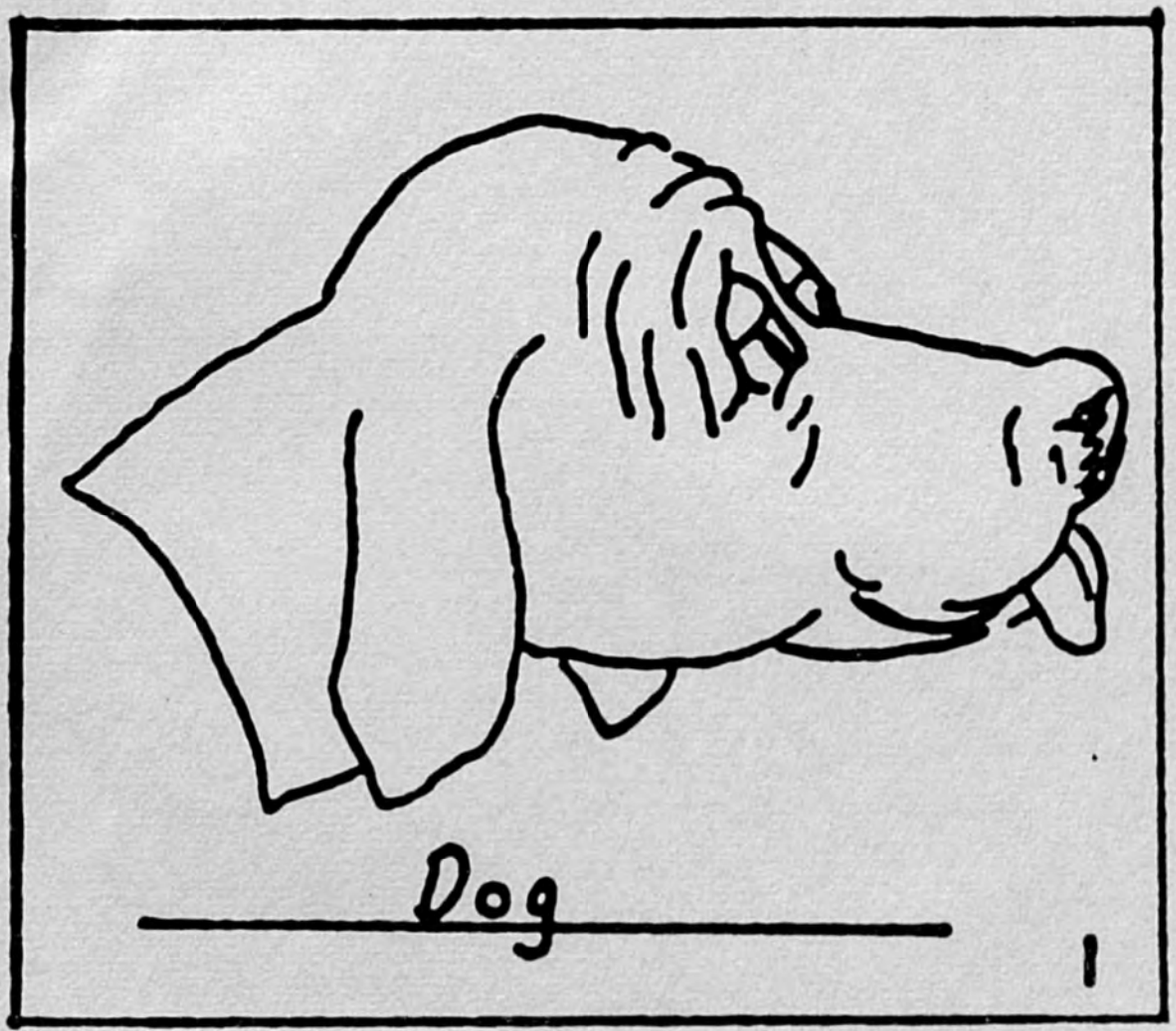
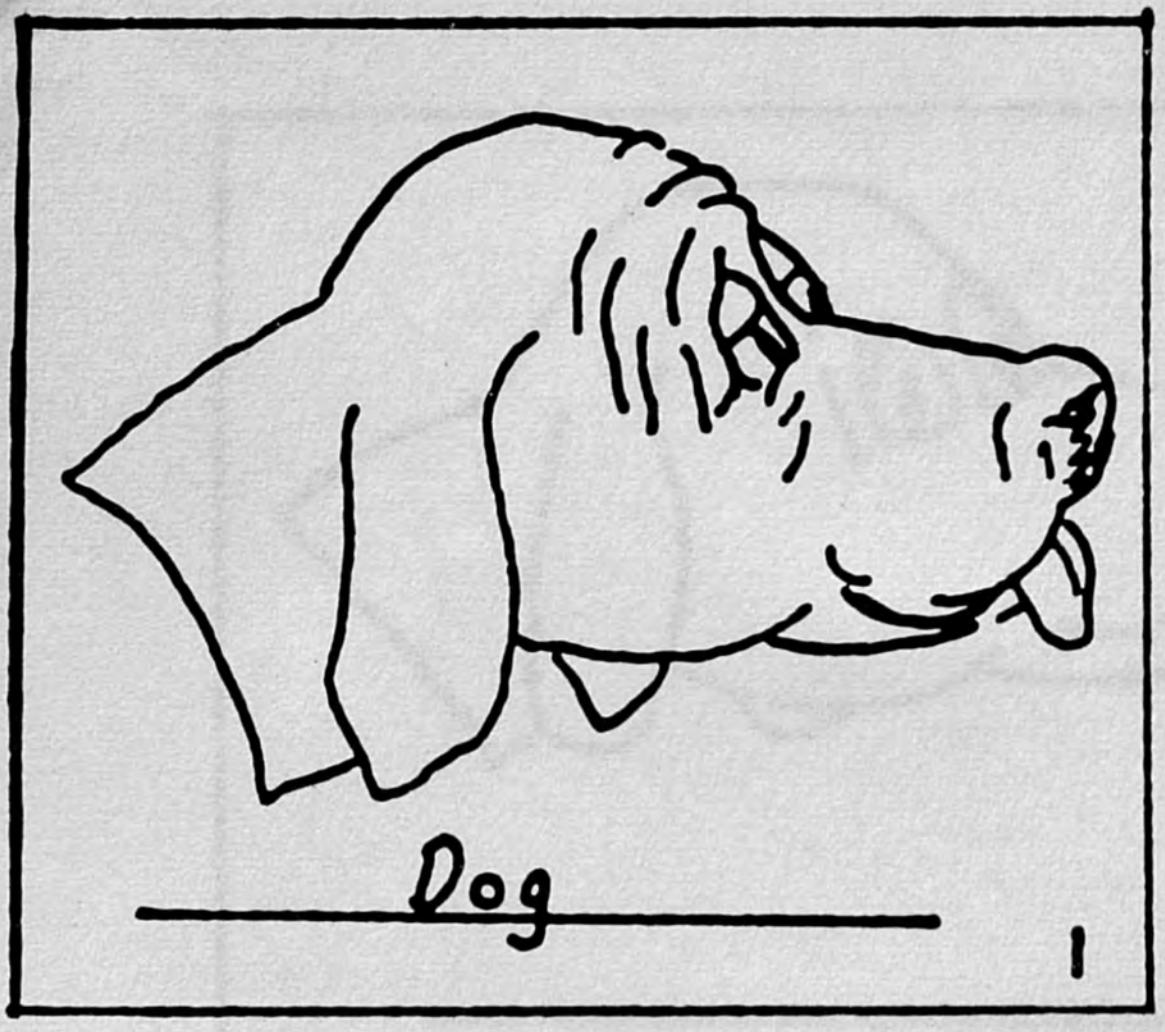
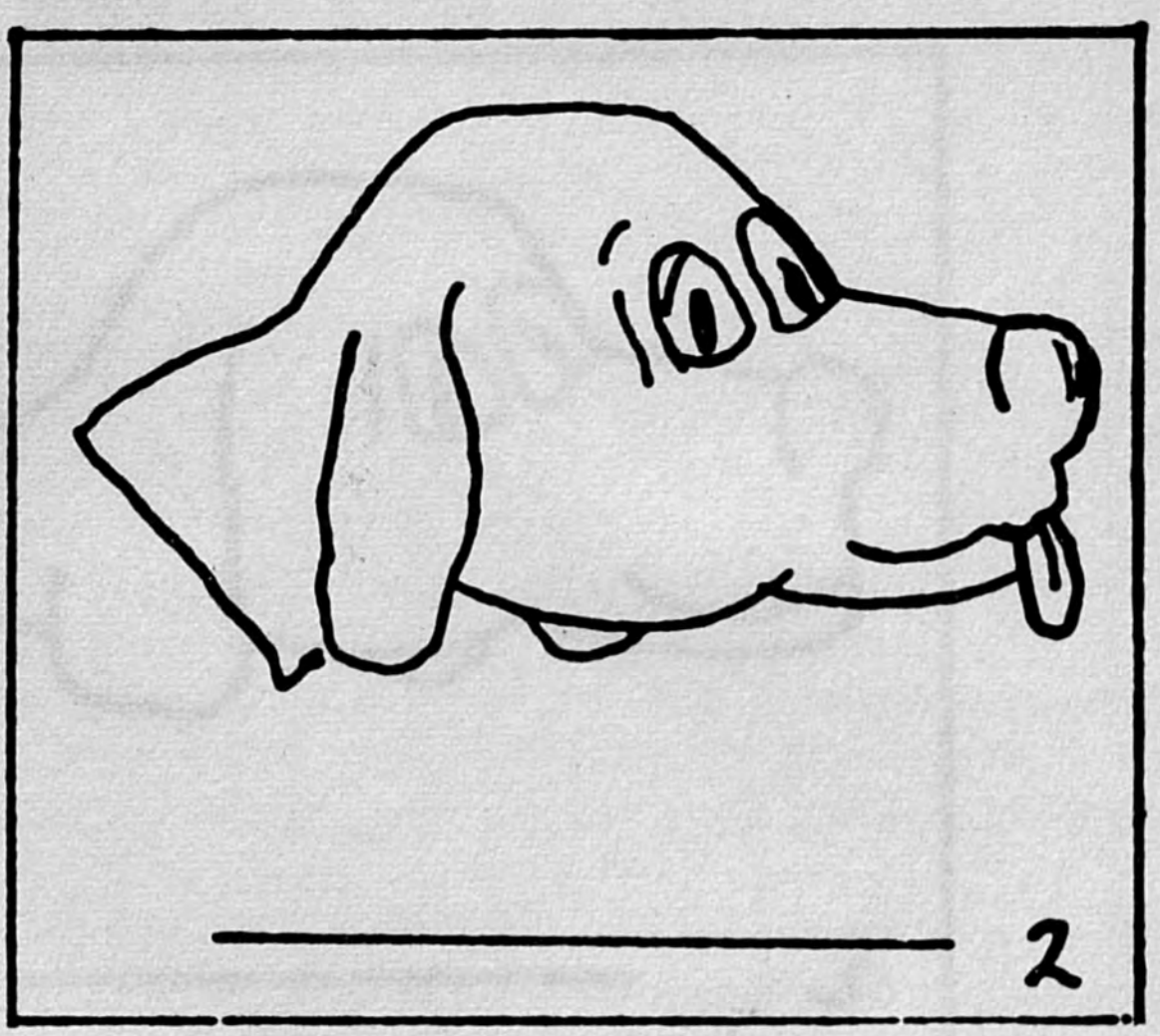

Dog
1


Dog
1



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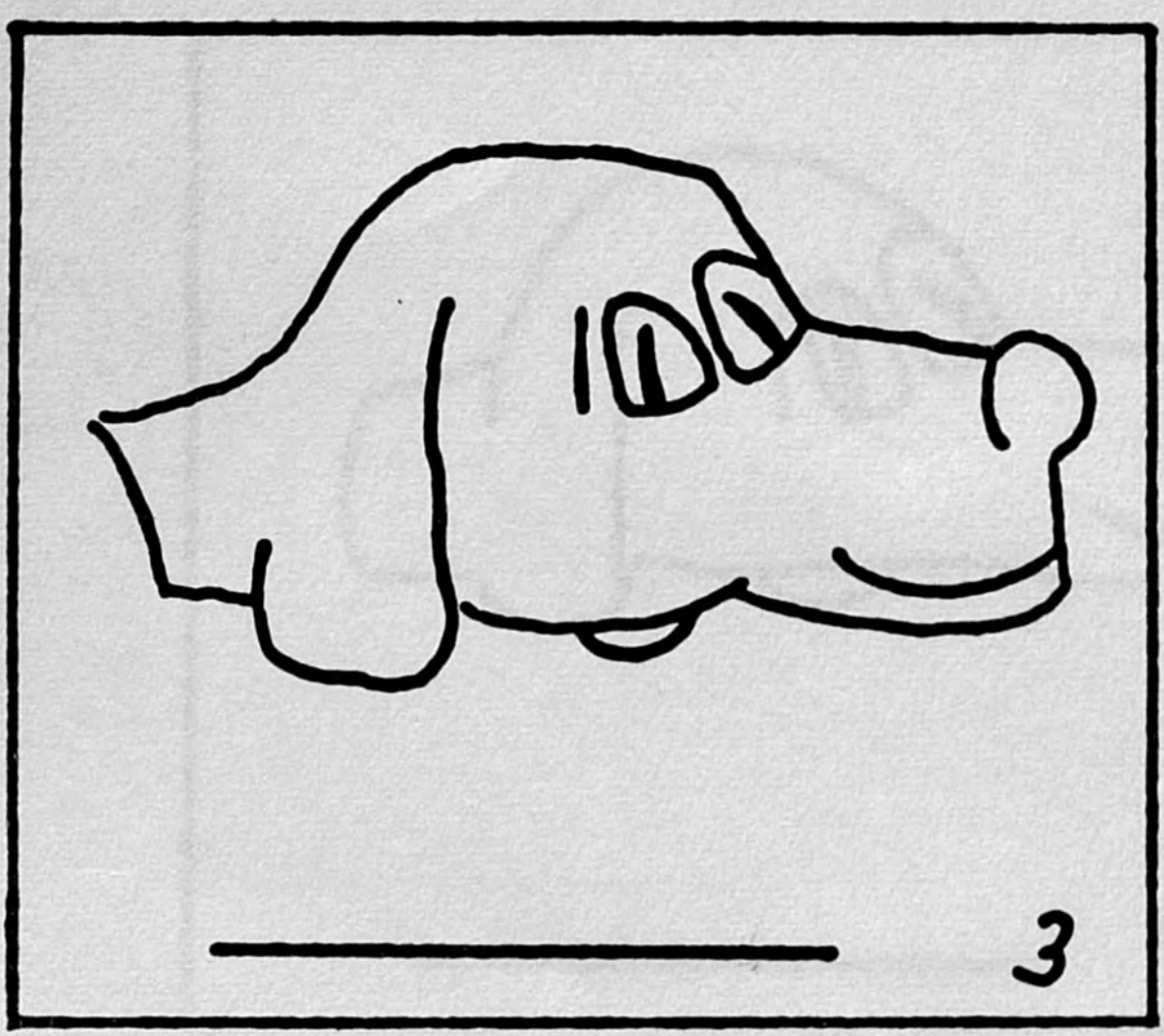

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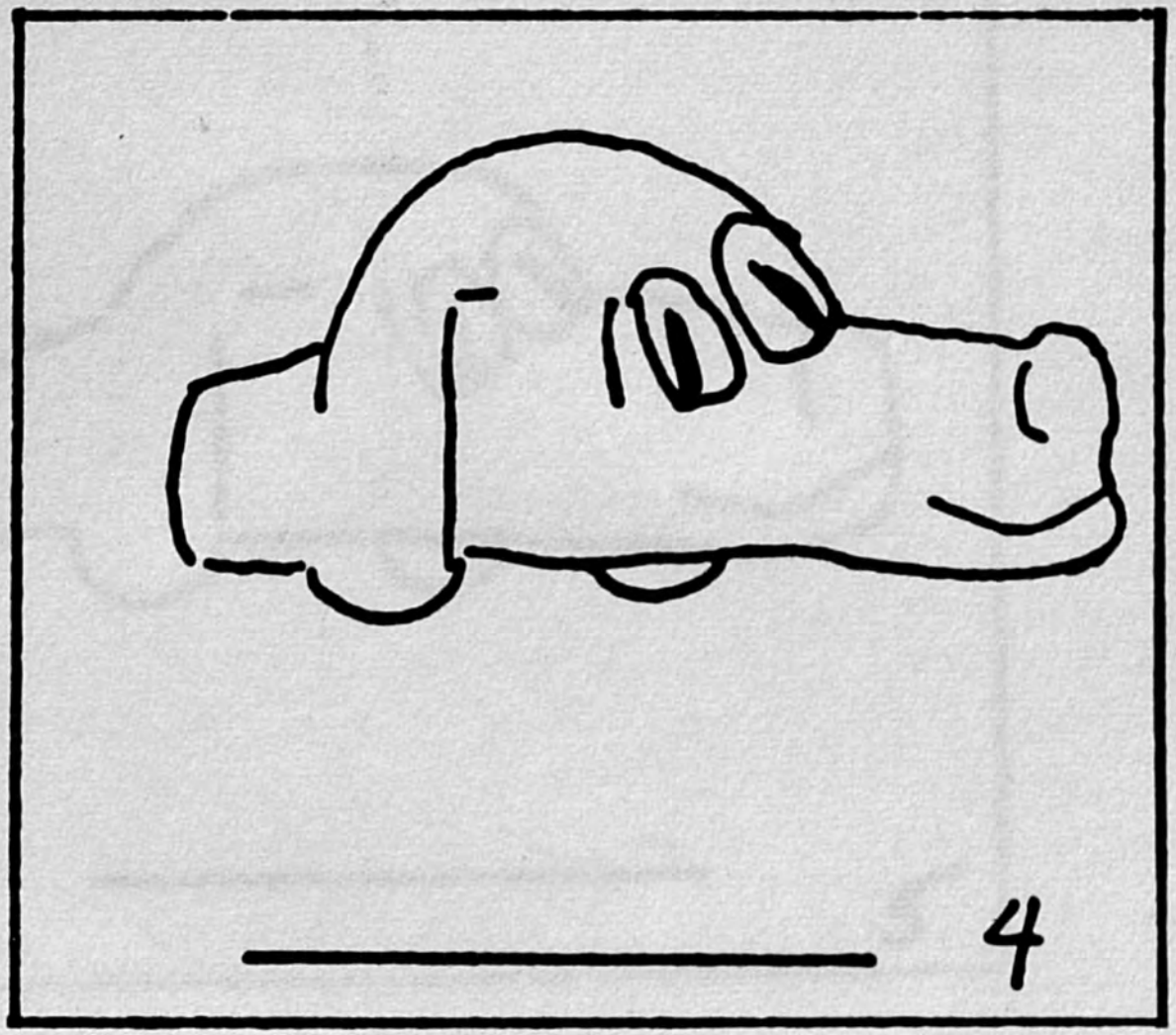
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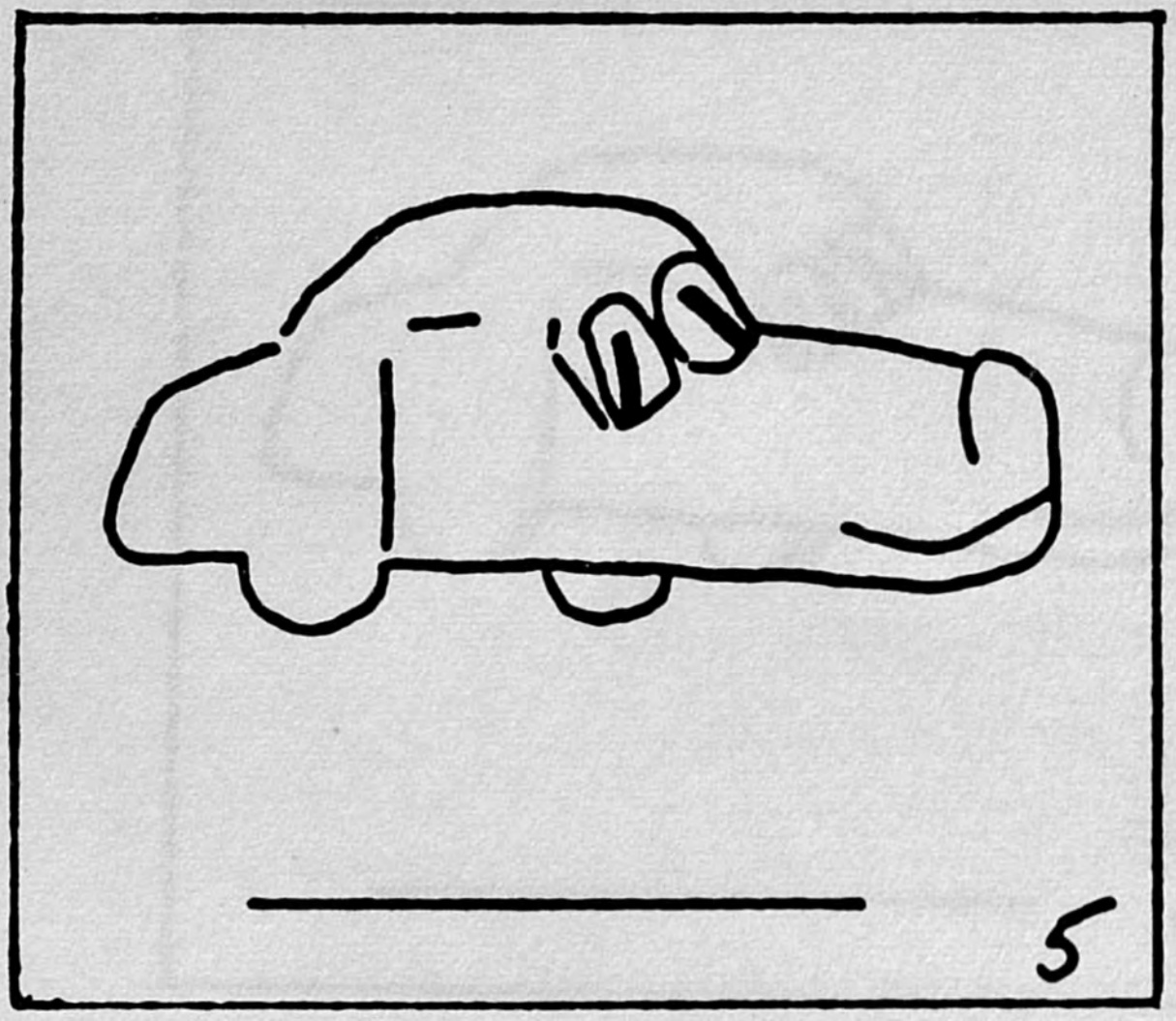

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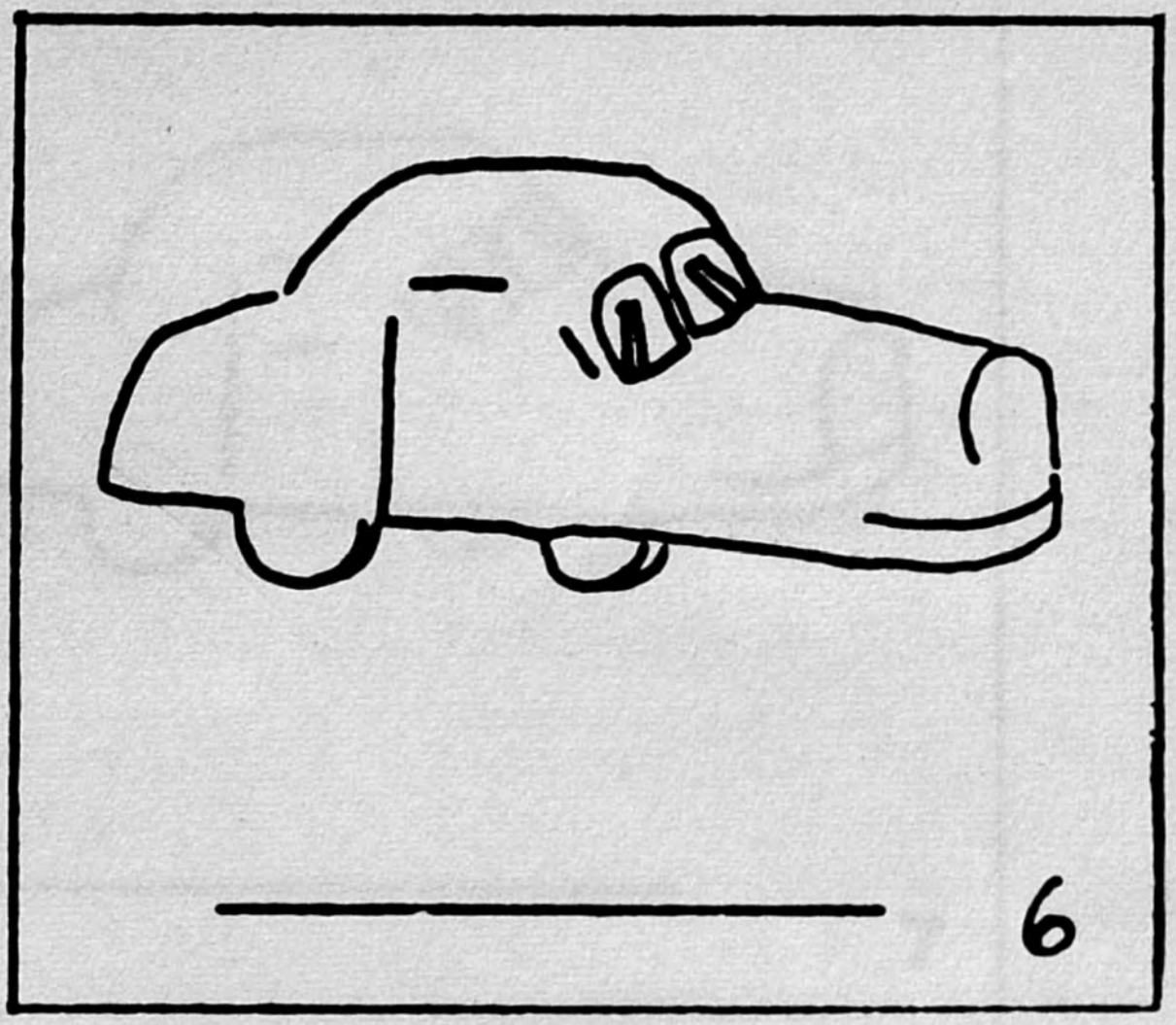

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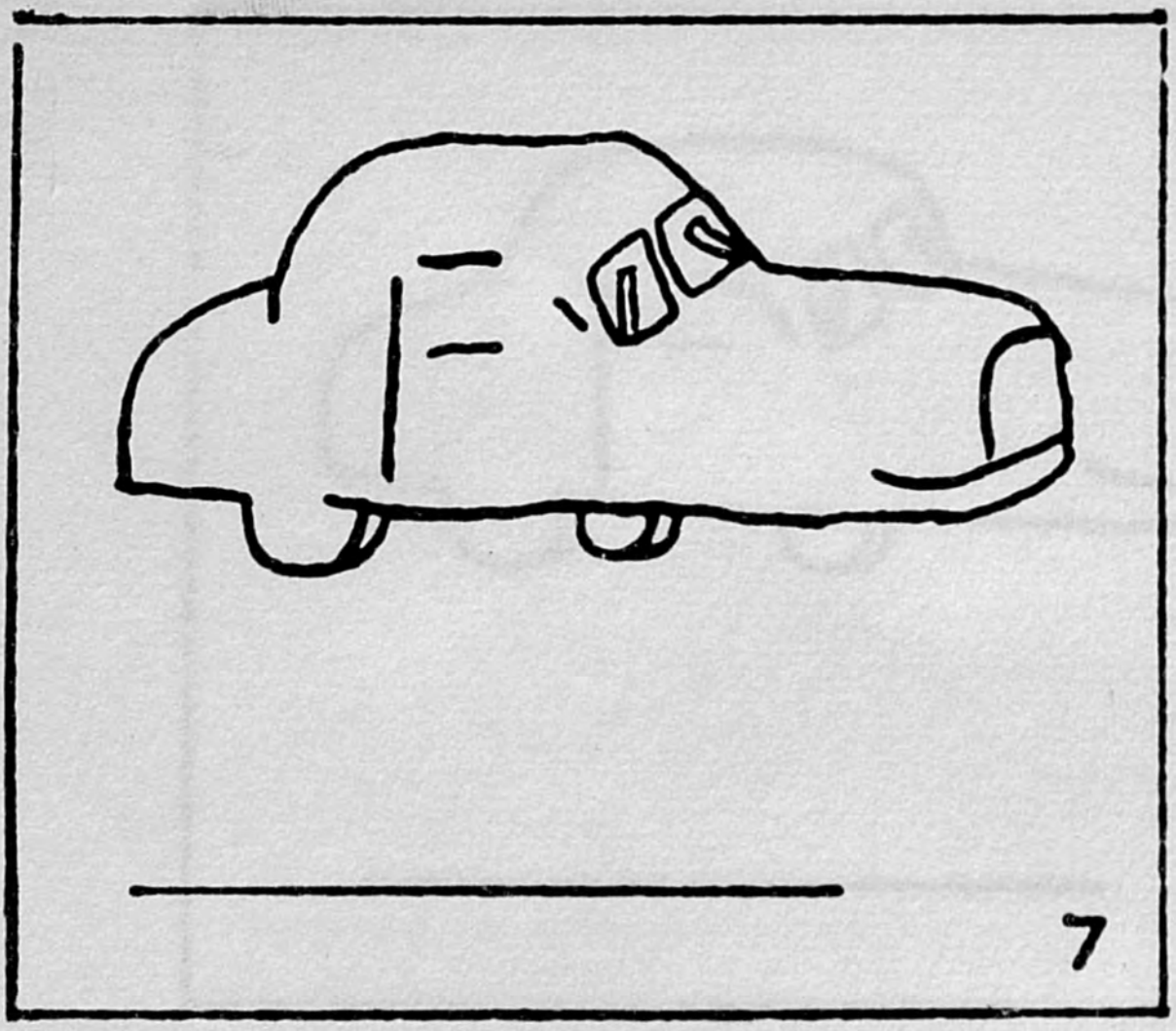

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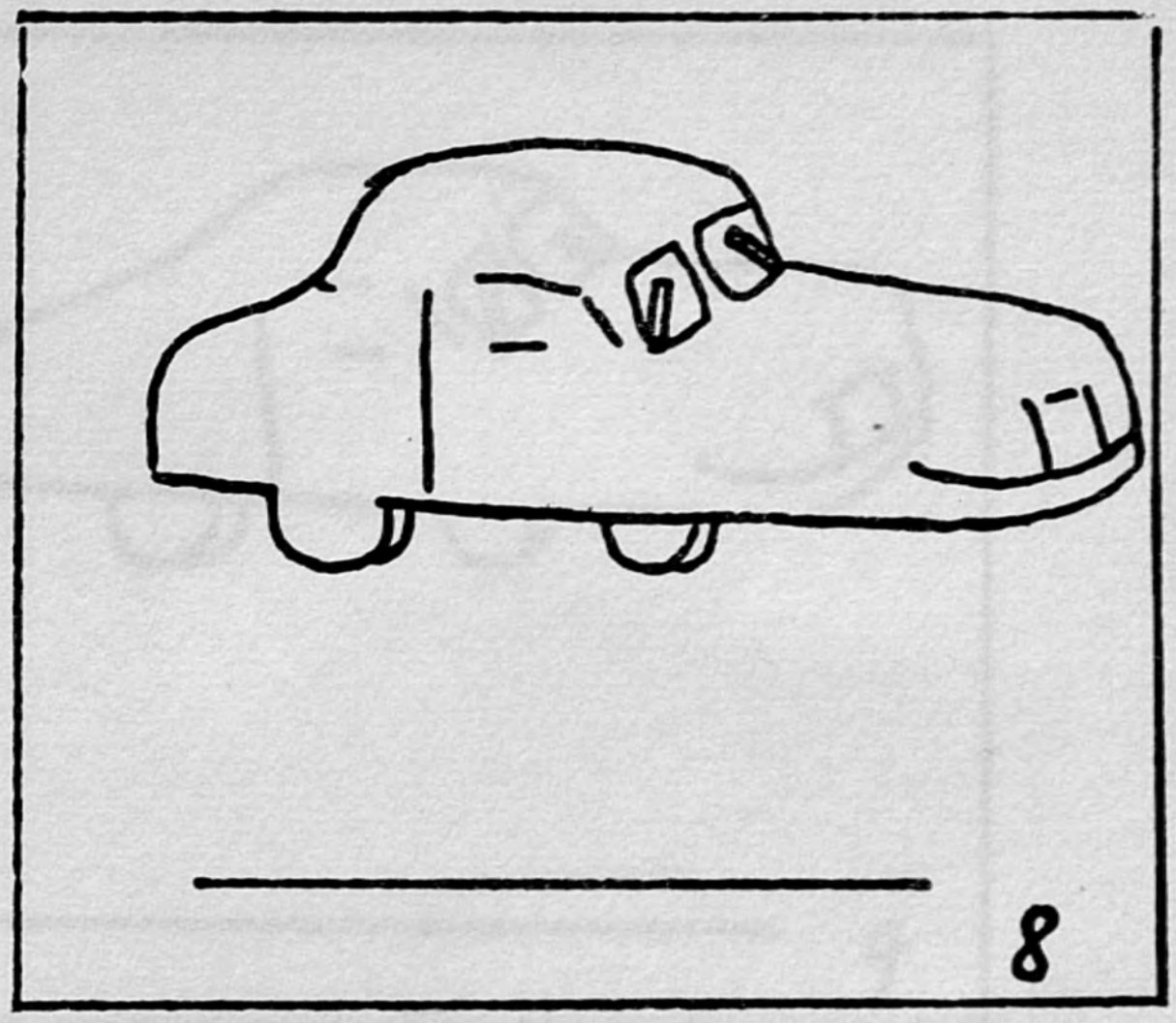

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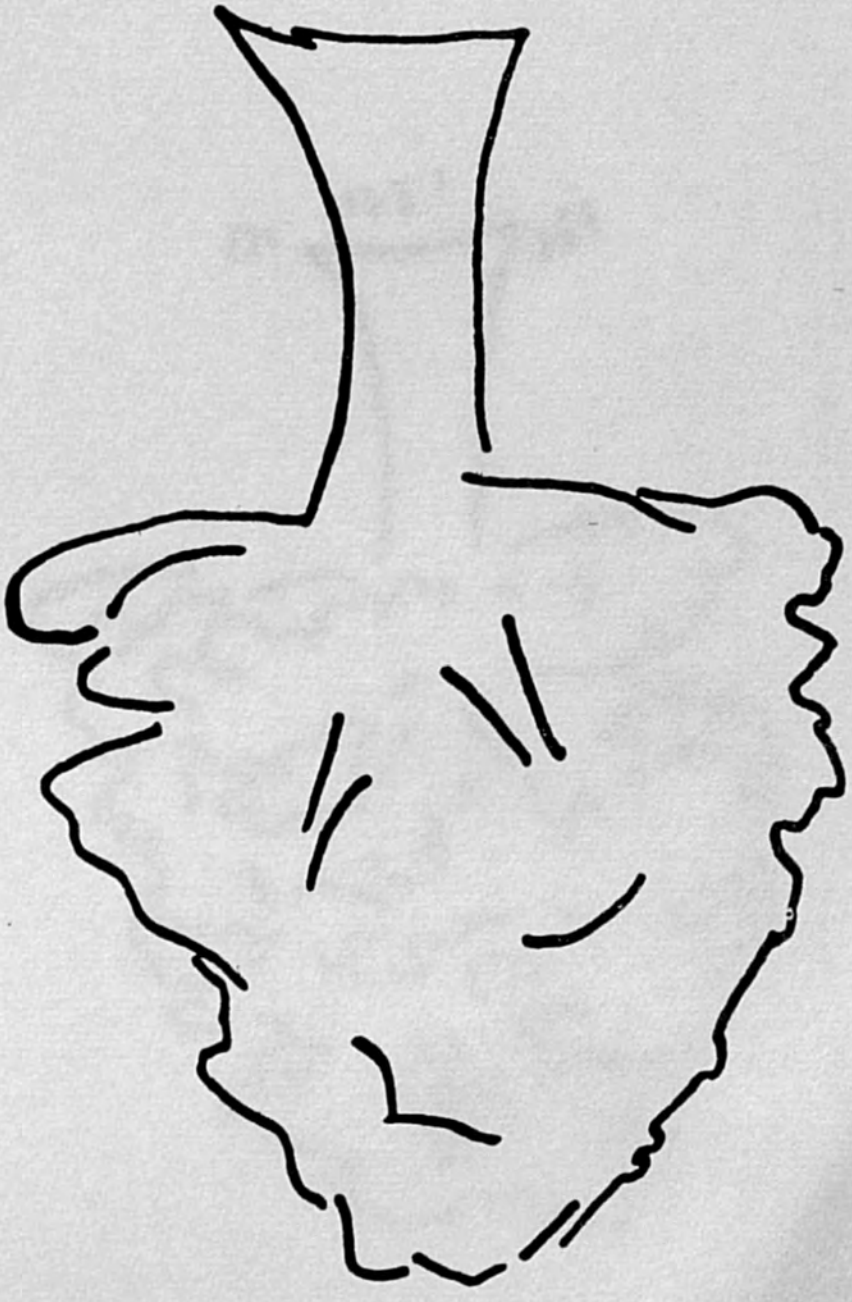

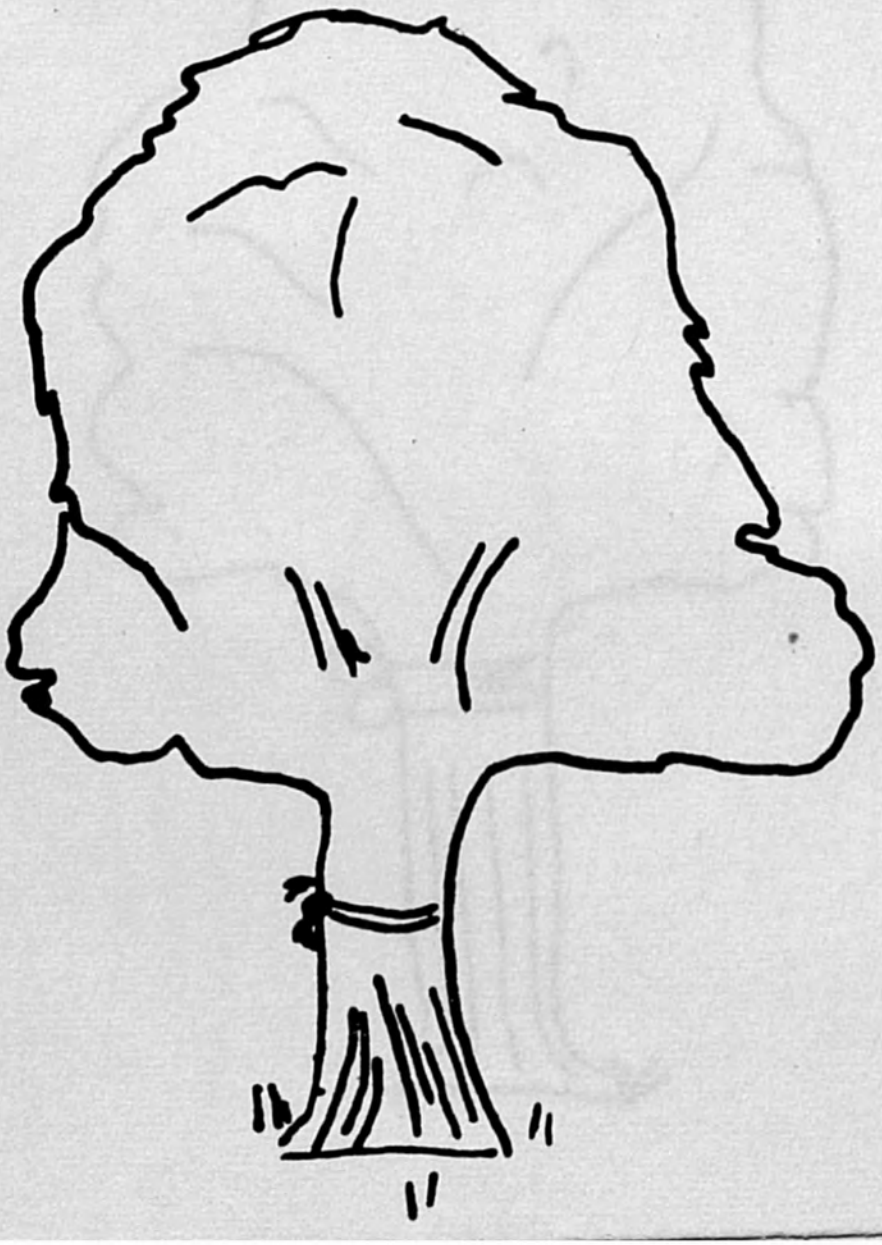

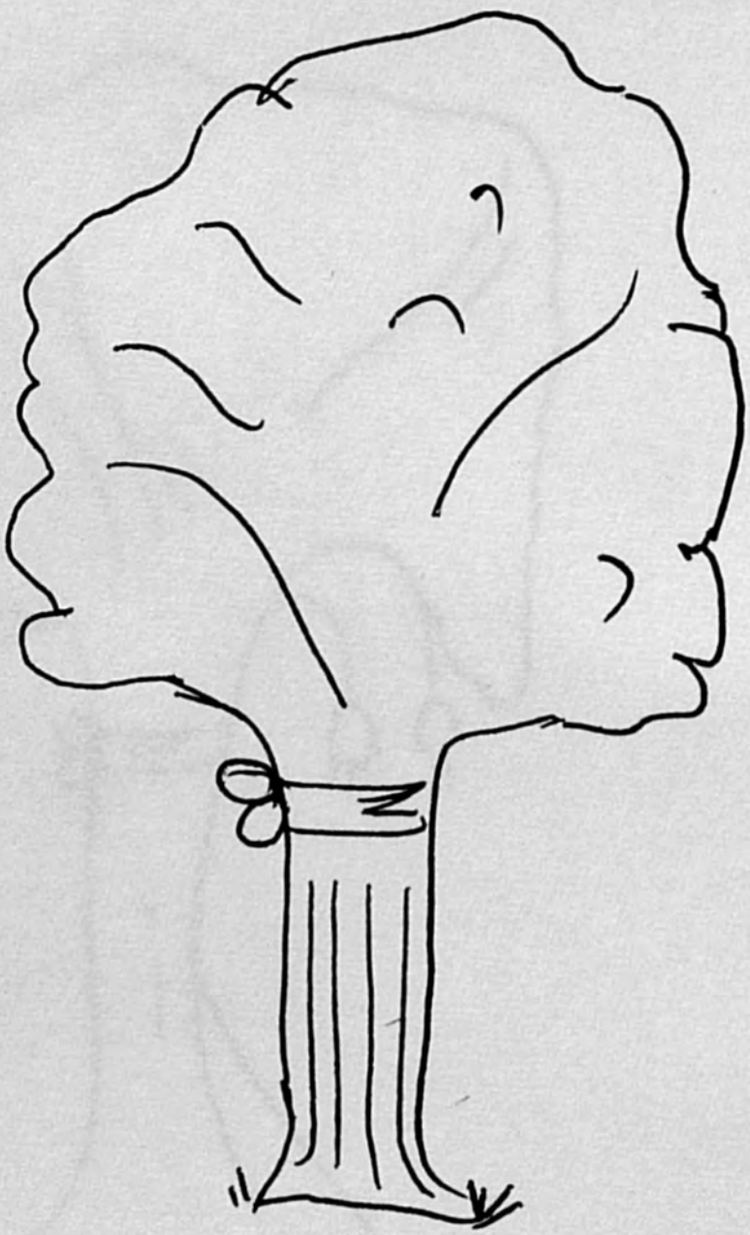

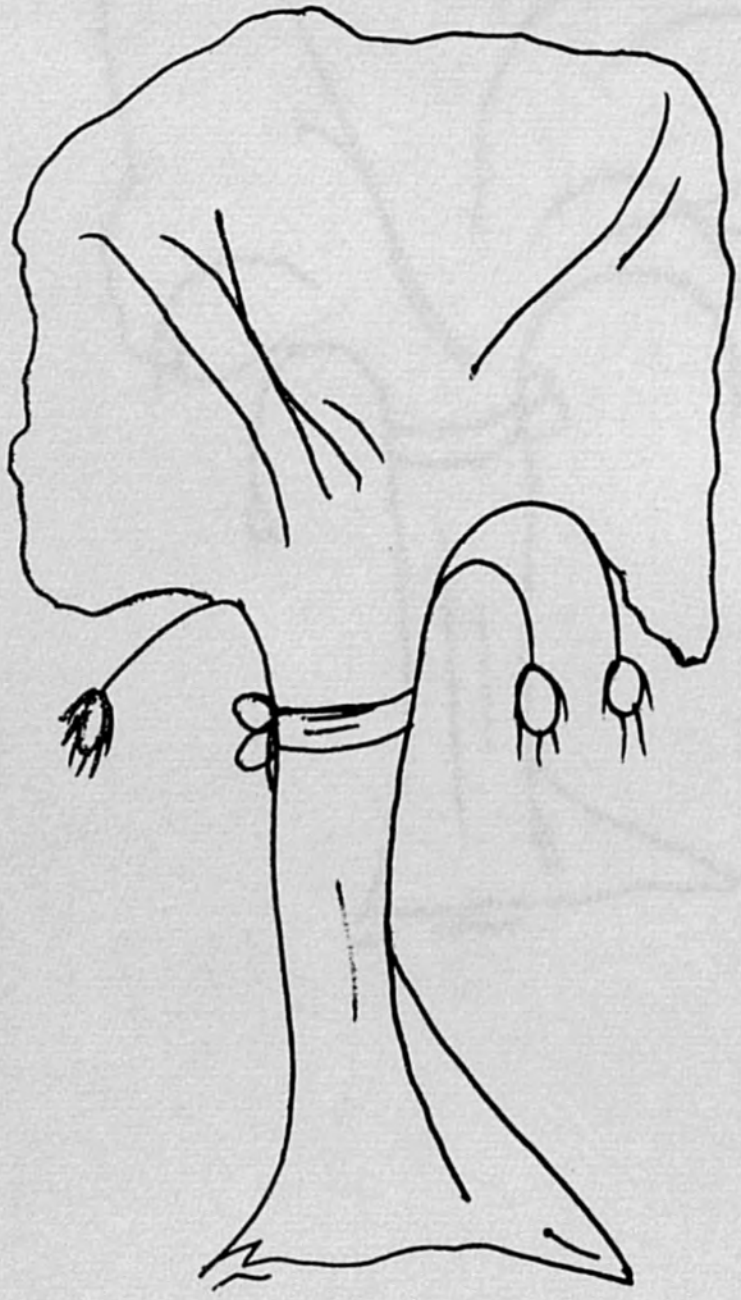

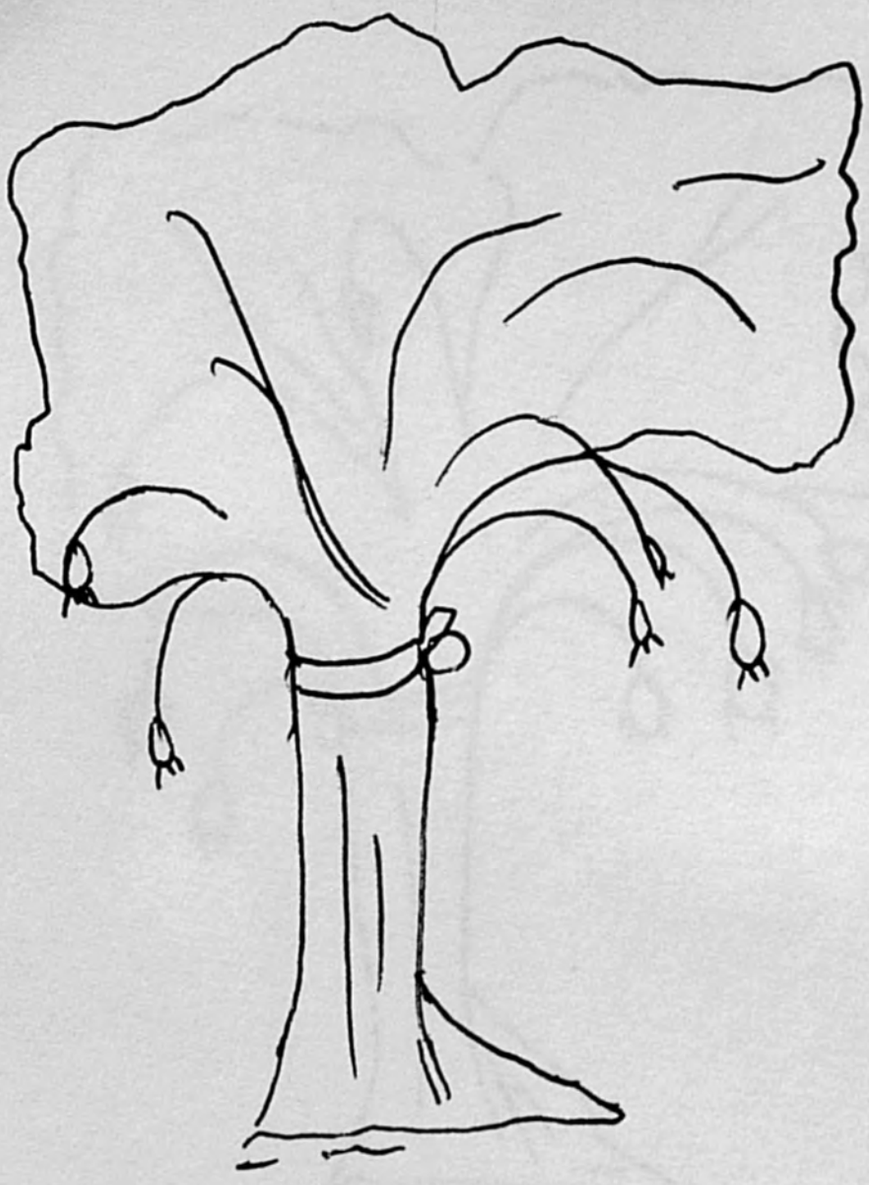

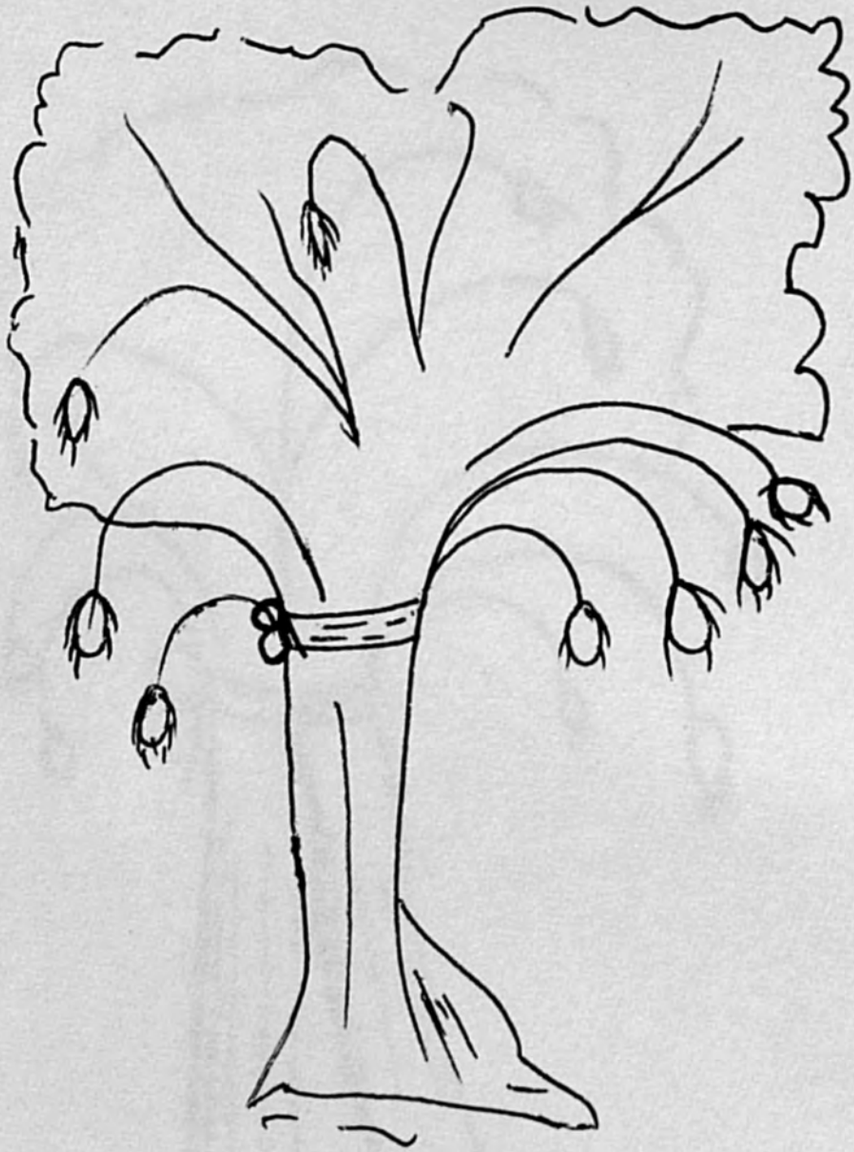

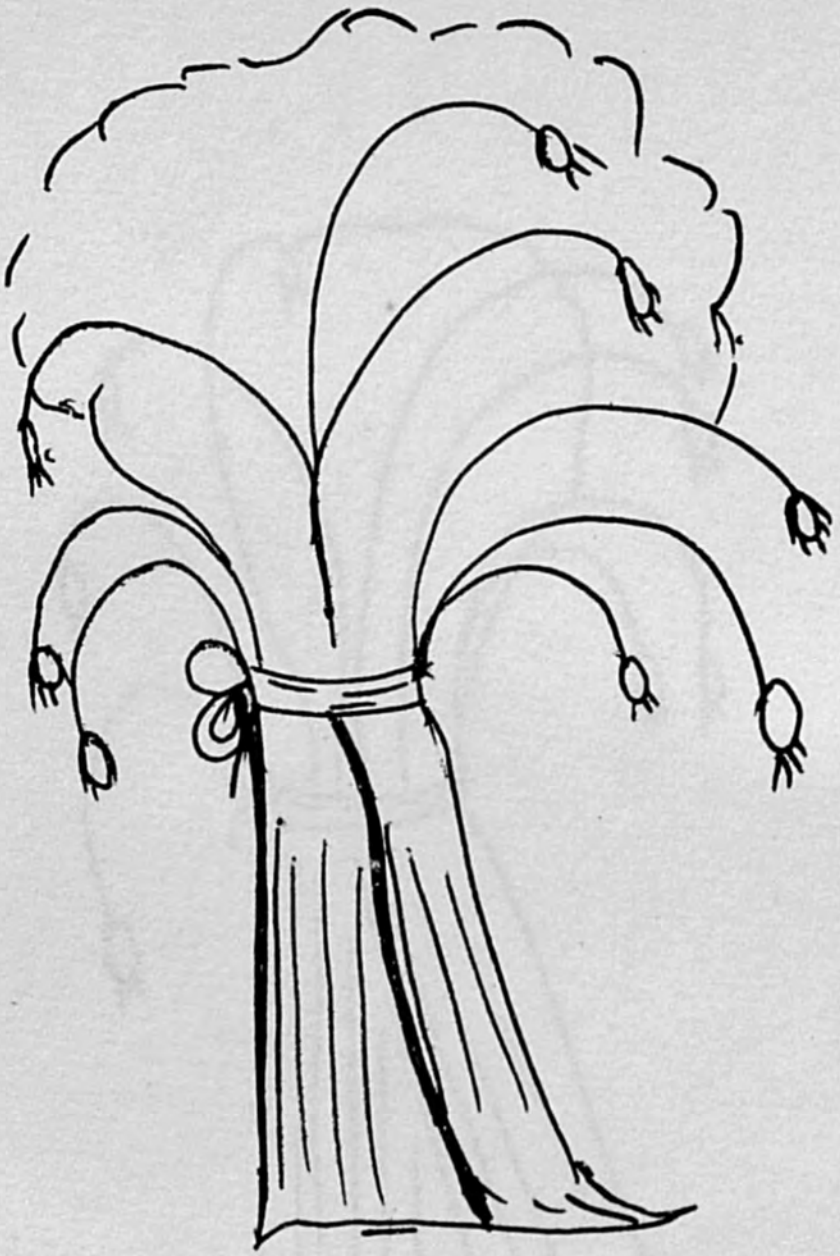

BOOKLET B

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