AUTHORITARIANISM AND CREATIVITY:

The Relationship in a New Zealand Population of Parents and Children (10-16 years.)

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ABSTRACT

The present report documented an empirical investigation which aimed to investigate the extent of any relationship between authoritarianism in parents and creativity attainment in their children under the general hypothesis:

> "That high authoritarian levels in parents would be associated with low creativity attainment in their children."

The study addressed the construct relationship within a New Zealand population of children (10 - 16 years) attending two private schools situated in a multi-cultural metropolitan area.

Statistical analyses showed a low magnitude relationship in the hypothesized direction, particularly between mother dogmatism and daughter creativity, although no statistically significant result was obtained.

A rationale was established from the literature supporting the notion that creativity levels were dependent to an extent on social environmental influences. The specific results of the study were discussed and implications were advanced.

DEDICATION

I am indebted to my wife
Lyn and daughter Melissa
who sacrificed valuable social interaction
during the time it took to complete
this thesis.

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1. INTRODUCTION

1.1 Purpose of the Study

The present investigation examined an hypothesized inverse relationship between the constructs authoritarianism and creativity. The specific context in which the two constructs were presumed to be correlated involved authoritarianism in parents and creativity in children 10 - 16 years of age.

The general study hypothesis stated that high authoritarianism levels in parents would be associated with low creativity attainments in their children. This reflected an assumption that creativity was a function of social factors and consequently, could be facilitated or constrained by the nature of social interaction with significant others (Torrance 1968, 1973; Amabile, 1983; Marino, 1968.)

1.2 Context of the Study

The study was conducted with a sample of 58 New Zealand children (10 - 16 years) who attended two South Auckland schools. These schools were owned and administered by the Seventh-day Adventist church.

1.3 Sample Characteristics

The families of the test population were predominantly members of the Seventh-day Adventist church. Exceptions included parents from the wider community who had chosen to

enrol their children in Seventh-day Adventist schools. The parent sample was composed of 88 parents of both solo and dual parent families.

1.4 Nature of the Study

This study took the form of an investigation observing the relationship of authoritarianism (dogmatism) and creativity in a specific social milieu. The literature suggested that creativity, being a function of social influence, would be found in an inverse relationship with parent authoritarianism (Amabile, 1983; Falealii, 1975; Marino, 1968.) A previous small scale study (Hann, 1987) provided a pilot for the present investigation within a New Zealand population.

1.5 Aims

The aim of the present study was to assess in a New Zealand population the relationship between dogmatism in parents and creativity in their children across three creativity variables.

Specific Aims

1. To determine dogmatism/creativity dependence/independence by statistically comparing differences in creativity attainments from children (10 - 16 years) of parent subgroups:

A - high dogmatic father/high dogmatic mother.

B - low dogmatic father/low dogmatic mother.

C - low dogmatic father/high dogmatic mother (mixed dogmatism.)

D - high dogmatic father/low dogmatic mother (mixed dogmatism.)

2. To study the influence that parent gender difference may have on:

a) male children

b) female children.

3. To study the relationship between high/low authoritarian/dogmatic mother/father relationships and the creative attainments of their children (10 - 16 years.)

4. To study observed relationships between polynesian parents and the creativity of their children.

Empirical Component

Within the empirical component of the research, the following statistical procedures were used:

a) chi square - this was used to test the particular relationship between authoritarianism (dogmatism) and creativity

b) multivariate analysis - this was used to gain an overall view of the relationships amongst sets of variables (subgroups within the test sample)

c) scattergram trend analysis as a device to illustrate relationship trends.

1.6 Procedural Aims - Scope and Sequence

1. Isolate test population, that is, New Zealand children attending two Seventh-day Adventist schools.

2. Identify sample, that is, children 10 - 16 years of age.

3. Assess dogmatism levels in parent sample (parents of children 10 - 16 years) by administering the D Scale (Rokeach, 1960.)

4. Assess child creativity over creativity variables

i) total creativity responses

ii) unique creativity responses

iii) unique/total creativity responses.

5. Categorize sample subgroups (parents) gender and high/low dogmatic combinations.

6. Conduct chi square and multivariate analyses of creativity attainments with high and low dogmatic parent subgroups.

7. Record quantitative results.

8. Discuss and advance any implications of the study.

2. LITERATURE REVIEW

2.1 Background

Amabile (1983) attempted to provide a psychological approach to creativity rather than the traditional `individualized' approaches (Galton, 1870; Cox, 1926; Mackinnon, 1926; Roe, 1952) where emphasis appeared to be on the creative individual.

> "Previous research...has had fundamentally different aims, in most respects, from those of social psychology of creativity...Cognitive psychologists studying the creative process have identified some operating procedures of the human cognitive system that seem to lead with a high probability to novel and useful solutions. In contrast to these research endeavours, a social psychology of creativity aims to identify particular social and environmental conditions that can positively or negatively influence the creativity of most individuals." (Amabile, 1983. p5, Emphasis added.)

The present review then focused on literature which addressed creativity with social factors by which it was likely to be influenced. One such factor was authoritarianism.

2.2 Authoritarianism

Authoritarianism was identified in the Authoritarian Personality (Adorno et al, 1950) and was often subsequently referred to as classic authoritarianism. This work was followed by the work of Rokeach (1960) found in The Open and Closed Mind. This isolated the construct of dogmatism as authoritarianism which was ideologically free. These two works formed the basis of the majority of subsequent studies in authoritarianism or dogmatism. The resulting assessment

instruments, the F Scale (authoritarianism) and the D Scale (dogmatism) were widely used in empirical studies.

The literature linked the belief structure of authoritarianism/dogmatism with effects on the interaction between cognitive and personal characteristics. There was a significant focus on personality traits and their relationship with authoritarianism (Hong and Withers,1982; Tom Cooper and McGraw, 1984; Ager, 1970; Starbird & Biller, 1976; Hart & Brown, 1967; Rappaport, 1978.)

Sexton (1983) found correlations between alienation and authoritarianism.

> "...alienation and dogmatism can be viewed as positively related concepts with several commonly held personality characteristics...expression of anxiety, social estrangement ...hostility ..aggression, loneliness, rejection, isolation and low self-esteem." (p84)

Rappaport's (1979) study found that high dogmatics lacked ability in synthesizing new beliefs. Similarly, Schultz & Divesta (1972) suggested that they had difficulty in evaluating information independent of an authority source and exhibited high failure in integrating new beliefs.

Marino (1968) noted that levels of religiosity[1] and authoritarianism were positively related. Weller et al (1975, p16) agreed that

> "the association between religiosity and authoritarianism has been substantiated at an extremely high level of significance."

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[1]This was defined by criteria which included indices of religious behaviour, for example, church membership, frequency of attendance, rate of private prayer, attitudes and beliefs toward and about religion and contributions to church funds.

In other words, there was considerable support for the notion that people who were highly religious were also likely to be highly authoritarian.

Authoritarianism in parents and its proposed relationship with children's creative abilities, was an integral part of the present study. Lesser and Hlavacek (1977, p105) concluded

> "...in many instances the children were hounded into a state of visible nervousness which seemed to impair their performance...these results support the hypothesis that high authoritarian parents produce a high anxiety state in their children which eventually produces both dependency and fear of failure. A consequence of these developments is rigid problem solving behaviour on perceptual tasks."

The literature suggested that a generalized concept of authoritarianism had validity and that the common instruments designed to measure the construct (F Scale, D Scale) were reliable. Reservations however, were noted, questioning the assumed ideologically free nature of the D Scale. Hoffnung (1975, p104) cited Leiter's (1970) study which concluded that the D Scale was in fact, ideologically biased to some extent.

> "...The possibility exists that this measure may reflect verbalizations of religious knowledge rather than serve as an index of attitudinal or behavioural set in the dimension of dogmatism."

Rigby (1989) suggested that authoritarianism had often been assumed to be more of a general factor underlying social attitudes (Phillips, 1979) than had been empirically established. Rigby specifically addressed a generally accepted attribute of authoritarianism, obedience and submission to authority.

> "...attitudes toward institutional authority and a concept of authoritarianism that emphasizes tough

> mindedness and cynicism were not positively correlated." (Rigby, 1989. p831)

In other words, Rigby provided some evidence to challenge the view that the generally accepted attribute of authoritarianism and attitudes of submission to authority could be expected to correlate positively with a general measure of authoritarianism.

While Rigby's criticism of a generalized conception of authoritarianism was somewhat isolated, it did focus attention on the possible need to re-address the generalised assumptions from which many empirical studies had operated.

2.3 Authoritarianism and Creativity

Amabile's (1983) social context for the facilitation of creativity provided support in postulating an inverse relationship between authoritarianism and creativity. Those studies specifically relevant to the influence of parental authoritarianism on their children's creativity were categorized into three general areas.

A. Authoritarian attributes and general personality characteristics.

B. Environmental factors and creative indices.

C. Parental authoritarian/dogmatic tendencies and creativity attainment in children.

Numerous studies gave strength to the notion that certain behavioural characteristics were either intrinsic to creativity or were associated attributes.

Uhes and Shaver (1970) found that high authoritarian subjects did not perform divergent operations as well as convergent operations. The ability to be able to think divergently was generally regarded as a factor common to creativity.

A similar characteristic related to the more general area of cognitive complexity was that high dogmatic subjects found difficulty in synthesizing new beliefs into an existing belief structure (Rapport, 1979.) As McHenry and Shouksmith (1970) pointed out, the ability to be creative relied on the ability to absorb and utilize a repertoire of cognitive skills.

The present study suggested that this ability to execute set breaking and individualistic strategies was likely to be hindered by dogmatic characteristics. This was supported by Schultz and Divesta (1972, p533.)

> "Persons characterized by a closed belief system (ie: high dogmatics)...fail to integrate new beliefs into their system..In contrast, persons characterized by an open belief system (ie: low dogmatics) experience relatively little difficulty during synthesis. Furthermore the ability of high dogmatics to evaluate information independent of its source is limited severely.."

Ohnmacht & McMorris's (1971) study suggested that highly dogmatic, field dependent groups, produced lower scores on a creativity measure than did low dogmatic field independent subjects.

Authoritarian people and groups have been hypothesized (Rokeach et al, 1960) to require submission and control over subordinates. How is the locus of control then, related to creativity? Amabile's (1983) work suggested that intrinsic

motivation, or an internal locus of control, was a pre-requisite for creativity. A cross cultural study (Aviram and Milgram 1977, p31) supported this.

> "...American and Israeli children were more open minded, more internal in locus of control and more creative in their thinking than children educated in the Soviet Union...is seen as resulting from the impact of cultural differences in socialization on both personality and cognitive development... parents, siblings, peers and other significant people in the child's life transmit the attitudes and cognitive styles prevalent in the society."

Grossman & Eisenman (1971) proposed a simple inverse relationship between authoritarianism and creativity where opposing polarities of open mindedness/closed mindedness, cognitive complexity/simplicity were situated on either end of a continuum.

> "...one might postulate an inverse relationship between the degree of one's authoritarian attitudes and the degree of one's creativity." (Grossman and Eisenman, 1971, p238)

Other studies did not support such a clear cut and simple relationship. Allen and Levine (1967) in their study Creativity and Conformity[2] concluded that while their empirical findings pointed toward an inverse relationship between conformity and creativity, it was in fact a complex interaction involving other factors including gender and I.Q.

The literature then suggested two main implications for the interaction between authoritarian characteristics, personality and cognitive style factors. Firstly, that

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[2]Conformers were seen as possessing such traits as rigidity, low ego strength, lack of spontaneity, intolerance of ambiguity, conventional attitudes and orthodox values, all of which were descriptors of authoritarianism/dogmatism.

sufficient empirical evidence existed to support the postulate that authoritarian-type characteristics were not harmonious with strategies recognised as necessary for creativity and secondly, it may have been simplistic to claim a clear cut relationship between the two constructs.

2.4 Environmental Influences and Creativity Indices

A major premise underlying the hypothesis that the social factor of authoritarianism would be found in a negative relationship with creativity in children, was that levels of creativity attainment or performance were discontinuous. In other words, creativity as a process, was altered by the operation of external factors. More general was the proposal that creativity to a greater or lesser extent, existed in a dependent relationship with cultural and environmental factors. For the present study, this involved focusing on the interaction with a social milieu which included parents, siblings, extended family and teachers.

Torrance's work in the 1960's contributed much to the environmental approach to creativity. His most definitive study was the documenting of a slump in creativity during the fourth grade. A longitudinal study (Torrance, 1968) confirmed that there was discontinuity in creativity attainment in 50% of subjects. A percentage of these later regained levels of creative attainment but between 16% and 29% showed long term losses. Rather than this being solely the result of developmental factors, Nash's (1974) study confirmed that in averting the slump, environmental factors played an important

role. In effect, Nash (p170) was testing Torrance's hypothesis by adding counteracting factors to the child's environment. He stated:

> "Apparently the program has found ways of achieving socialization without sacrificing creative growth...It was concluded that a school setting giving an emphasis to creative growth can avert a fourth grade slump in the creative thinking abilities of gifted children."

The findings of these studies provided support for previous studies by Torrance in which he had proposed several factors he believed affected "the development and/or expression of creative thinking." (Torrance 1961, p141) They included:

a) educational level,

b) differential treatment of boys and girls,

c) premature attempts to eliminate fantasy,

d) restrictions on manipulativeness and curiosity,

e) conditions resulting in fear and timidity, in both authority and peer relations,

f) misplaced emphasis on certain verbal skills, especially on mechanics,

g) overemphasis on prevention and on `success',

h) lack of resources for working out ideas.

Smith and Carlsson (1984, p331), while supporting the influence of environmental factors, proposed a more interactive approach (cf Vaughan, 1983, 1985; Amabile, 1983.)

> "The creative principle seems, among other things, to be facilitated by trust in one's own ideas and this trust <u>is not independent of the home climate</u>." (Emphasis added).

The present investigation was premised on the notion that appropriate home and school (cultural) environments serve to

facilitate creativity. Falealii (1975) suggested that the opposite situation may also be true in constraining creativity.

Torrance identified traditional Samoan society as highly authoritarian. Increased creativity attainments within a school context were noted where low authoritarian attitudes were prevalent. He concluded that authoritarian attitudes and cultural values were responsible for the constraining factors necessary for creativity. Falealii expanded this finding further within the context of social consequences of authoritarianism. He suggested that to be relevant in the modern age, Samoan and other Pacific Island cultures needed to look critically at traditional attitudes, values and practices which in effect, prevented a breaking of set routines. Imposed group norms were seen as leading to conformity by the individual and the lack of innovation within the culture. Falealii (1975, p19) argued:

> "The traditional process of socialization inherent in our schools is very harmful to the development of creativity."

Falealii and Sexton (1983) also suggested the social consequences of alienation and disillusionment among youth were a result of a rigid retention of the status quo.

Dewing (1970a. p403) provided an excellent summation of findings of low creativity as influenced by social factors.

> "...there is little contradiction in the main findings. The most important factors seem to be non-authoritarian discipline, diverse and relatively intellectual interests, and a parent-child relationship which is not overly dependent."

Dewing also cited Dye (1964), Hagen (1964), Lembright & Yamamoto (1965), Straus & Straus (1968), and Torrance (1963) as

supporting the notion of negative relationships between societies where authoritarian characteristics were present and creative attainment of its members.

The literature then suggested a strong link between several factors from social environments and varying levels of creativity attainment. One such focus of several studies was authoritarianism in parents.

2.5 Cognitive Factors and Parent Authoritarianism

Rigidity in problem solving was demonstrated to be positively related to authoritarianism (Milton, 1957) and by extension, was to some extent, antithetical to the personality characteristics necessary for creativity.

Lesser and Hlavacek (1977) suggested that the effects of authoritarianism could be transmitted from parent to child. The investigation found that in all cases of parent and sibling gender combinations (Fathers/Mothers/Daughters/Sons) where low levels of child performance occurred on tasks requiring flexible cognitive strategies, these were associated with high authoritarian levels in parents. In all but two instances, the relationship reached statistical significance. Furthermore, informal observations suggested that high authoritarian parents interacted with their children in such a way that states of high anxiety, dependency and fear of failure occurred in the children (Adorno et al. 1950, p105.) These traits did not harmonize with the pre-requisite conditions for encouraging creativity.

2.6 Construct Relationship

Literature which addressed the specific relationship of creativity to authoritarianism was central to this study. It justified the general rationale as well as supplying supporting empirical evidence. Bayard-De-Volo and Fiebert (1977) hypothesized an inverse relationship between creativity in pre-school children and parent authoritarianism. Correlations reported for mothers and fathers respectively were -0.62 ($p<-0.01$) and -0.65 ($p<0.01$).

Marino (1968) found strong indications that authoritarianism within a culture (Catholicism across several countries) was in many, but not all cases, was inversely related to levels of creativity in school children. He suggested that within a general context of socialization, the schools (Catholic or non-Catholic) were not the causal factor in creativity differences. Rather, the inhibiting factors were a function of local cultural factors which included the influence of parents. Marino concluded:

> "...this research has demonstrated that Catholicism in general rather than Catholic education in particular is the responsible factor." (p267)

The implication was then of a causal link between parental authoritarianism and creativity.

States of conformity and, conversely, the ability to manage and exploit diversity, were recognised correlates of factors which either constrained or facilitated creativity. Dreyer and Wells (1966) found that in terms of open mindedness and dogmatism respectively (Rokeach 1960, p88.)

> "...Parents of high-creative children...may indeed be individuals who are in general open to their own feelings and the feelings of others."

This was noted as further evidence of the constraining nature of authoritarianism. Shmukler's (1985) study noted that where mothers exhibited minimal yet consistent supportive control, their children exhibited greater creative play than those either under complete maternal control or totally laissez-faire regimes. This was supported by Domino (date unknown) who concluded that several maternal factors were correlated with their son's creativity. High creative levels were found in sons where:

a) mothers maintained a degree of emotional distance from their children

b) there was little stress on conformity to parental values,

c) there was toleration of a child exhibiting regressive behaviour,

d) optimal levels of parental dominance were identified,

e) mothers were open and expressive.

2.7 Summary

Creativity as a function of social environmental influences was a theme well established in the literature. Further, authoritarianism was identified as being conceptually antithetical to creativity and creative attainments. In general, empirical findings were supported by these proposals.

There were strong empirical indications of an inverse relationship between authoritarianism in parents and the creativity attainments of their children.

3. CREATIVITY: THE CONSTRUCT

3.1 Creativity: Definition

The problem of definition has been an ongoing issue with only a limited consensus.

> "Creativity...is an elusive notion which does not lend itself easily to either assessment or even definition." (Shmukler 1985, p75)

Rampaul, Singh and Didyck (1984, p125) illustrated a typical dilemma stated by behavioural scientists.

> "The uncertainty and lack of success in deriving a satisfactory operational definition constitute a fundamental problem...Definitional disagreement persists..."

Trefor Vaughan (1982, p6) was similarly direct in his search for a concrete conceptual definition.

> "Creativity is thus almost impossible to pin down; from every standpoint something, possibly central to its meaning, seems to elude us and hang about, as it were, on the edges of our definitions somewhere between the light of fully defined meaning and the shadows of some other region of experience... - a kind of land between the lights: the land of green ginger."

3.2 Creativity: Behaviour

A functional definition which was relevant to this study was from the work of T.M. Amabile (1983) which addressed creativity within a social environmental context. Creativity, in this view, was seen as incorporating two elements (p33).

> "A product or response will be judged creative to the extent that a) it is both a novel and appropriate, useful, correct or valuable response to the task at hand and b) the task is heuristic rather than algorithmic."

This was an obvious attempt to synthesize the dichotomy between the `creative products' approach and the `process of creativity'. It was postulated in the present study that within social environments, there existed a causal relationship between high authoritarianism and low creativity. That is, authoritarianism constrained creativity. Focusing on creative strategies rather than creative products emphasized the interaction between people and their social surroundings. The intention was to operationalize the construct from a task analysis viewpoint. Did the task involve the engagement of traits recognized as creative; the crossing of cognitive boundaries, risk taking, open endedness and originality?

Creative individuals were recognized within this study as exhibiting innovativeness, risktaking, divergent production, fluency, flexibility and originality (Guilford, 1950.) They were descriptors of behaviours which generated numbers of responses, were able to break the norm, and where individuality produced the unique and novel.

> "We emphasized the kind of creative thinking that scientists and writers appear to exhibit..." (Guilford (1973) p235)

Creative thinking involved the ability to draw on a wide range of cognitive components.

> "Janusian thinking consists of actively conceiving two or more opposites or antithetical ideas, images or concepts simultaneously, opposites or antitheses are conceived as existing side by side or as equally operative and equally true. Such thinking is highly complex. It is intrinsic to creativity..." (Rothenberg 1979, p55. Emphasis added.)

Vaughan (1983) further advanced this concept when he focused on the tension which he believed existed where creativity occurred and was a necessary precursor for the `charged' interactive environment from which creativity flowed.

> "The creative process, itself, can only be sustained by maintaining the opposites in equal contest with each other, and that where this balance is lost, or not established, the creative process degenerates along with the creative acts which are its fruits." (Vaughan 1983, p38)

What are these opposites? Examples may include total hate or total love which may produce bigotry and violence on one hand or extreme liberalism on the other. The resolution of these extremes however, was regarded as the `balancing of the opposites,' providing a tension from which creativity could ensue.

This study regarded creativity as being necessary to break from set routines, to develop the ability to exploit complexity.

3.3 Creativity: Product or Process?

Creative people within western culture (eg Mozart, Da Vinci et al.) were regarded as such because of their products. Often this recognition was posthumous as the products, within the lifetime of the producer, were not recognized as valuable or innovative. Could only individuals who produce observable creative products be termed creative or was there a wider category? White (1968) took an extreme product-oriented position.

> "Creative thinking...is not a peculiar type of thinking that has different features from other types of thinking...`creative' is a medal which we

> can pin on public products, not the name of private process..." (Bailin 1984, p13. Emphasis added.)

This interpretation of creativity focused on the great creators who through history produced attainments which were recognized as creative and possessing social value. However, where on the continuum between those popularly acclaimed as creative and those who never achieve fame as creators, could the line of creativity be drawn?

There may have been many who did not produce socially recognized products yet exhibited task solution strategies which were creative within a personal sphere. This would imply strategies which included risk taking, originality and innovation. This function may have operated in measurable terms as a product or alternatively, as an inner process.

The study of creativity in certain individuals, because of their prominence and accessability tended to be a research emphasis. It was unfortunate in some respects because it focused on the creative personality, minimizing a perception of social factors which contributed in constraining or facilitating the creative process.

> "Implicit...is the assumption that the important characteristics of creative people are largely innate...and that these..separate creative people from non-creative people..." (Amabile 1983, p5.)

The few individuals recognised as being creative have over-shadowed the majority who have never produced a recognized creative product. There were those who could never achieve public acclaim but nevertheless, in an individual sphere, could `achieve their potentialities' (Rogers, 1962.)

3.4 Creativity: Self Actualization

From an individual viewpoint, Maslow's self-actualization concept also depended on this ability. Increasingly complex societies forced not only the exceptional individuals to tolerate and manage ambiguous or complex situations but also the majority.

Amabile (1983) also called for a wider definition of creative phenomena. This was seen as having value initially, not only for recognising creativity, but also its facilitation and further, it extended the possibility of creative potential to most individuals, not only the select few.

It could be argued that success in managing complex and ambiguous life situations called for problem solving which demanded creative thinking. The potential for creativity was then extended from the few who produced creative products to the many who were required to manage and exploit ambiguity and complexity in their social milieu. A wider definition of creativity extended recognition of creativity to most individuals. Fine (1977, p494) stated:

> "Children need to know they have worth for who they are, not just for what they can do..." (Emphasis added.)

Similarly, Rogers (1954) suggested that creativity was internally assessed, including internal cognitive and affective characteristics. Such personal behaviour as dreams, idiosyncratic activities, habits and attitudes needed to be regarded as related to a holistic view of human potential, of which creativity was an intrinsic factor.

3.5 Creativity: Implications

The study took the view that creative acts, or at least the disposition toward them, occurred as a function of interaction. This involved an individual's cognitive and affective resources, the pre-dispositions gained from previous environments, and the provocation of immediate stimuli.

Creative products were viewed as desirable but sometimes misleading if these were to be the only indices of creativity. Rather, they were seen as one expression of a process. Vaughan (1982) observed that creativity within cultures occurred in particular areas where cultural forces were in a state of interaction; where the culture was composed of a complex mosaic of stimuli.

> "(In) Southern Europe...ways of thought developed (in) Northern Forests...(these) met those developed under endless sun and star light...the Near East where ancient trade routes from four very different worlds met...in this one area of earth, with its massive potential over very many centuries for the interaction of an enormous range of different ideas..." (Vaughan 1982, p7)

It was perhaps no coincidence that the complexity, difference, and individuality which these cosmopolitan social environments produced, were precursors of geographical regions where great creativity occurred.

When creativity was seen in the context of global influences, then its real relevance as an empirical focus became evident. Via media and communication, the world has become a unit where complexity and change are the norm rather than the exception. In the past, creative acts were the flowers of their civilizations and the non-creative citizen

could, without consequence, lead a narrow rigid existence. This is less so in contemporary western society.

The complex nature of the culture requires an ability to tolerate ambiguity, a development of a range of skills and abilities, and the ability to cope with change, all characteristics necessary for creativity. These attributes are no longer needed only by exceptional people in particular situations but abilities required for communities to cope meaningfully with their environment. If self actualization could be termed the fulfilment of individual existence, then this could only occur when the individual is master of his/her social interaction. It is within this social context that creativity could be expected to occur.

3.6 Summary

The present study recognized the difficulty in precisely defining creativity. However, it supported Amabile's (1983) functional definition. Creativity was seen as a novel, useful or valuable response to a heuristic task. The abilities displayed in achieving this aim included innovativeness, risk taking, divergent production, fluency, flexibility and originality (Guilford, 1950.)

It was suggested that creativity, as a process, was achievable by most individuals within their own personal sphere and that, to an extent, creativity was related to an internalized concept of self actualization (Rogers, 1954.) The management and exploitation of complexity was regarded as a

desirable characteristic within an increasingly complex and cosmopolitan social milieu.

4. AUTHORITARIANISM: THE CONSTRUCT

4.1 Background and Definitions

A particular interest in this study was the proposed relationship between authoritarianism and creativity within a social interaction context. Authoritarianism, as a social construct, was identified by Fromm (1941), Maslow (1943), and Adorno, Frenkel-Brunswick et al.(1950.) during the 1940's when political and ideological movements were active.

Adorno et al endeavoured to identify `potentially fascistic individuals' (Adorno et al. 1950, p1) and were thus motivated by the general hypothesis;

> "That the political, economic, and social convictions of an individual often form a broad and coherent pattern, as if bound together by a `mentality' or `spirit' and that this pattern is an expression of deep lying trends in his personality".

The study of authoritarianism was consistent in asserting that as a construct, it was concerned not with content but with a particular belief structure. That is, how did a person characteristically form and evaluate his/her beliefs and attitudes toward other's beliefs? This was contrasted with what a person believed, their ideological content.

The F Scale (Fascism Scale) was used by Adorno to assess authoritarianism while a later research programme (Rokeach, 1960) devised the D Scale (dogmatism.)

Rokeach's concern was not that he took issue with

Adorno's general thesis, but that it appeared restricted in regarding authoritarianism as being essentially politically right wing. For example, political conservatism and anti-semitism appeared to be positively related to right wing fascist political leanings.

Rokeach's interest was in a construct which could be applied to subjects regardless of political persuasion. In other words, he wanted to assess a generalized, ideologically free, belief structure which exhibited the characteristics of authoritarianism. Marino (1968, p19-20) cited nine indices of the authoritarian personality (Brown, 1965.)

> "1. Conventionalism - A rigid adherence to conventional middle class values.
> 2. Authoritarian Submission - A submissive, uncritical attitude toward idealized moral authorities of the `in group'.
> 3. Authoritarian Aggression - A tendency to be on the look out for and to condemn, reject and punish people who violate conventional standards.
> 4. Anti-intraception - An opposition to the subjective, the imaginative, the tender minded.
> 5. Superstition & Stereotypy - The belief in mystical determinants of the individual's fate, the disposition to think in rigid categories.
> 6. Power & Toughness - A preoccupation with dominance-submission, strong-weak, leader-follower dimensions, identification with power figures, over-emphasis upon the conventionalized attributes of the ego, exaggerated assertion of strength and toughness.
> 7. Destructiveness & Cynicism - A generalized hostility, vilification of the human.
> 8. Projectivity - The disposition that wild and dangerous things go on in the world, the projection outwards of unconscious emotional impulses.
> 9. Sex - exaggerated concern with `sexual goings on.'"

Rokeach (1960) maintained that authoritarian people exhibited a closed mindedness, adhered to party line thinking,

and were unwilling or unable to synthesize new beliefs into existing belief structures.

Rokeach's instrument for assessing authoritarianism was specifically designed to identify and measure dogmatism levels which were analogous with an open and closed minded continuum. Authoritarianism and dogmatism shared common descriptors, the literature treating them as related constructs.

> "The concept of authoritarianism represents an attempt to link deepseated personality dispositions with...adher(ence) to a rigid and dogmatic ideology..." (Robinson and Shaver (1973) Cited by Tom, Cooper and McGraw (1984) p260, emphasis added.)

Hart and Brown (1967, p431) also used the terms interchangeably:

> "When a teacher is dogmatic or authoritarian...when a teacher is non-dogmatic or non-authoritarian..."

The present investigation took a similar conceptual view and generally supported Brown's (1965) description of authoritarianism operationalized within the empirical component as dogmatism. Personality characteristics identified as behavioural attributes of dogmatism by Rokeach (1960) and supported by subsequent research included:

a) the high dogmatic's inability to integrate new beliefs into existing belief system (Fillenbaum & Sackman, 1961; Rokeach, 1960; Schultz & Divesta, 1972.)

b) high dogmatics had greater need of closure than low dogmatics (Rokeach, 1960; Ager, 1970.) High dogmatism

restricted synthetic thinking more than it restricted analytic thinking.[1]

It was also strongly associated with an authoritarian outlook on life (Rokeach 1960.) Dogmatism was positively related to intolerance toward those of opposing beliefs (Rokeach, 1960.) High dogmatics exhibited an exaggerated tolerance of those with similar beliefs to their own (Rokeach, 1960.) Increasing levels of dogmatism were positively related to less tolerance and less flexibility (Korn and Gidden, 1964 cited by Sexton 1983, p81.) Dogmatic subjects tended to be leader-oriented, inhibited, uncreative and unspontaneous (Nidorf and Argabrite, 1968, as used by Sexton, 1983.)

Starbird and Biller (1976, p231) suggested that

> "people who are highly dogmatic...tend to be less cognitively complex."

They proposed that cognitively simple subjects were less accurate in predicting other people's behaviour. This was consistent with Hart and Brown's (1967, p431) assertion

> "...an Authoritarian person ranks people in hierarchical fashion and has a tendency to have <u>but one fixed of values - his(her) own</u> - by which to measure all people and achievement. He (she) depends heavily on external cues in making judgement and does not bother to `look inside' the other." (Emphasis added).

Rigidity rather than flexibility appeared to typify the authoritarian/dogmatic belief structure.

Rokeach's generalization of the dogmatic construct was probably a useful attempt at summation.

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[1]Ager (1970, p180) suggested that synthetic thinking was a type of creativity.

> "...the closed system is nothing more than the total network of psycho-analytic defensive mechanisms organised together to form a cognitive system and designed to shield a vulnerable mind." (Rokeach & Restle 1960, p70. Emphasis added.)

This study concurred with the literature in regarding the constructs under a similar affiliation. The quantitative element in this study used the D Scale to assess authoritarianism within the subjects. Therefore, within the empirical component, the term dogmatism was used.

4.2 Authority and Authoritarianism

Authoritarianism should not be confused with the appropriate use of authority. Marino (1968, p13) made the distinction between the two terms as:

> "A necessary condition (Authority) and one of its possible consequents (Authoritarianism.)"

It was regarded by Marino and supported by the present study that authority figures were necessary and that relationships of individuals and groups to authority figures within society were acceptable and valuable.

> "The free individual who on the basis of reason decides which authorities to rely on and when to do so is clearly not authoritarian." (Marino, p15)

Marino used Fromm's (1941) distinction between authority which was rational, (chosen or administered with reason), and authority, which was inhibiting to the subordinate. One could argue that any imposition of authority was inevitably inhibiting. However, the distinction could be illustrated by the difference between two hypothetical relationships.

Relationship A - Tutor and student in a mutually respectful learning situation.

Relationship B - Owner and slave relationship.

(Fromm, 1941)

Between relationships A and B, there were obvious definitional and behavioral distinctions to be made but when comparisons of intent, motivation and respect were addressed, the differences were accentuated. Relationship A displayed guidance by, and interaction with, authority but consistent with the implicit aim of encouraging independence, freedom, rational judgement, and an internal locus of control in the subordinate. There would be evidence of both parties respecting the others' needs. Conversely, relationship B would rely on power, dominance and submission. The aim of the dominant party would be to exert methods of extrinsic control on the subordinate. Little respect for individual needs would be evident and freedom in decision making, especially of the subordinate party, would be limited.

The point could be reiterated that authority vested in and used by individuals or groups in appropriate contexts was necessary for the proper and ordered functioning of a society where freedom of choice, the dignity of the individual and internal locii of control were valued attributes. In contrast, authoritarian/dogmatic traits and characteristics, did not coexist happily with human interaction scenarios where free will, human dignity, individual needs and rights and democracy were valued.

Authoritarian thinking then involved dichotomous categories of `them and us', `black and white' and `right and wrong'. Deutalbaum (1978, p2) introduced a wider perspective on authoritarianism.

> "When women, when Blacks, when Indians, when brutalized and colonized peoples cry against, interrogate, and explode the rules, the laws, the privileges, the myths laid down by and for the men, the whites, the parents, husbands and colonizers, then they no longer authorize, empower, permit by their acceptance the other's right to command, his authority. They no longer abandon their own judgement and experience for these are the resources of self definition. They want to be and are becoming authors, makers, producers, creators."

4.3 Authoritarianism and Creativity Discontinuity: Empirical Support

Marino (1968) suggested a direct negative relationship between the two constructs, authoritarianism and creativity. In the study where authoritarianism versus creativity was addressed for Catholics in Catholic schools and Protestants and Catholics in public schools, he concluded:

> "This research has demonstrated the antithesis, (creativity versus authoritarianism)...Catholics, a group demonstrably more authoritarian and conforming, evidence significantly less originality. ideational fluency and spontaneous flexibility (creativity)." (Marino 1968, p267)

He went on to qualify this statement by suggesting the two constructs were antithetical but not mutually exclusive.

> "One does not expect to find no creative authoritarians." (p263)

In other words, the existence of one construct does not automatically preclude the co-existence of the other. Anderson (1959, p147) also ventured that:

> "All uses of force, coercion, domination, shame, blame, guilt have one effect: the stifling of the creative process, the annihilation of originality."

Marino's (1968) study documented statistically significant differences in the creativity attainment levels of comparative high and low authoritarian populations. High authoritarian Catholic subjects were found to be less creative and more conformist than non-Catholics.

Marino was not alone in proposing an antithetical stance. Grossman and Eisenman (1971, p244) although they were reluctant to accept a clear cut negative relationship, suggested that creativity and authoritarianism were so related.

> "There are theoretical grounds...for believing that these constructs are at opposed ends of a complexity/simplicity or open-minded/closed-minded dimension.'

There existed some inconsistency however, in the concept of a one to one type inverse relationship. The above study noted that high authoritarian males changed their authoritarian levels under experimental conditions. Under the above `continuum' model, one could expect to see a corresponding shift in creativity. This in fact, did not occur. Other empirical findings added weight to the idea that the relationship was a complex rather than single dimensional one. Williams et al (1971) found a slight relationship between the two constructs. Over three measures of creativity, one, originality, showed an inverse relationship.

This was supported by Jacoby (1967) who, when he used the D Scale and Mednick's Remote Associates Test (R.A.T.), found indications which pointed toward a relationship between

dogmatism and creativity. Williams et al.(1971) pointed out that there did exist empirically, a slight negative relationship with originality where three indices of creativity were measured via Guilford's Association IV test (1962); fluency, flexibility, and originality.

Problem solving ability was central to the concept of creativity and creative products. A difference in task orientation within problem solving was noted between high and low dogmatics. Both groups showed they were influenced by authority endorsement (Schultz and Divesta, undated), a form of extrinsic motivation which was itself seen (Amabile, 1983) as being a general negative influence on the solution of heuristic tasks (tasks which required creative thinking.) High dogmatics tended to be authority-oriented in problem solving whereas low dogmatic subjects were initially overtly suspicious of authority endorsement and generally exhibited openness to task demands - they were task oriented (Schultz & Divesta, undated.) The nature of authoritarianism suggested that subjects who relied on authority endorsement alone, should not be receptive to, or effective in, coping with attendant task factors which were complex or ambiguous.

The present study accepted Shmukler's (1985) suggestion that children's play was, within its developmental limitations, an expression of creativity. It was suggested that personal qualities of risk taking, imagination, and tolerance of ambiguity in imaginative play, were related to later divergent production. In comparing authoritarian and non-authoritarian mothering styles, it was found that where excessive structure

was imposed by mothers on child play activity, the consequent play type was unimaginative. Given optimal psychological space to express inner feelings and tolerate ambiguity, children were shown to exhibit creative play.

This was consistent with the `balance of the opposites' conception of creativity (Vaughan, 1985; Wallace, 1986) in that the converse mothering style of laissez-faire strategies also resulted in low rates of imaginative play. Shmukler's study was supported by Bayard de Volo & Fiebert (1977) where parent authoritarianism was purported to negatively influence the creative attainments of pre-school children.

High dogmatic subjects were found to score lower on divergent productions than convergent productions, whereas low dogmatic subjects performed both divergent and convergent functions equally well (Uhes and Shaver, 1970.) It was concluded that creative characteristics were negatively correlated with levels of dogmatism.

> "...the more dogmatic the individual the less likely it was that he(she) would be able to generate information when the emphasis was upon variety and quantity of output from the same source. This operation appears to be the one most clearly involved in measuring aptitude for creative potential." (Uhes & Shaver 1970, p8)

Relevant also were Torrance's (1962, 1964, 1965, 1968) empirical studies addressing a fourth grade slump in creative attainment levels among children. It was noted by Nash (1974, p168) that the slump paralleled

> "...increases in school related difficulties in learning and problems in mental health development..." A direct implication of social environment constraining creativity."

Torrance found that students educated in a comparatively low authoritarian mission school environment, exhibited higher levels of creativity than a sample population entirely socialized in a traditional authoritarian social context (Taylor, C.W. (1968) p77,78.)

Falealii (1975) went further when he identified factors of rigidity, demanding of conformity and extreme status quo in Samoan society. He saw these authoritarian characteristics as not only specifically inhibiting creativity, but regarded the set-breaking conditions which would allow creativity as being significant to the health of the culture.

> "If society fails to foster this potential creative urge...(by) or stubbornly stifling it, man is losing his birth right of being the lord of creation and is gaining in grounds to be the least effective species on the face of the earth." (Falealii 1975, p3)

Aviram and Milgram's (1977, p31) cross-cultural study found that social environments had an active inhibiting or facilitating effect on creativity.

> "American and Israeli children were more open-minded, more internal in locus of control and more creative in their thinking than children educated in the Soviet Union. The sharp contrast...is seen as resulting from the impact of cultural differences <u>in socialization on both personality and cognitive development</u>." (Emphasis added.)

Empirically, the evidence suggested that creativity did not exist independent of its social environment but that creative attainment levels were directly related to social psychological stimuli. Marino (1968, p267) concluded that his study:

> "...(indicated) the importance of social factors in facilitation and inhibition of creativity..."

4.4 Summary

Authoritarianism was defined in terms of a particular belief structure and operationalized as dogmatism (Rokeach, 1960.) It was noted that high dogmatics displayed characteristics of intolerance, rigidity and tended toward cognitive simplicity.

A distinction was made between the definition and function of authority in society and one of its consequents, authoritarianism (Marino, 1968.)

Empirical studies suggested that aspects of authoritarianism were inversely related to creativity attainment thus supporting the notion of creativity attainment as a function of social interaction.

5. HYPOTHESES

The procedure in this research was employed to provide evidence of a dependent relationship between dogmatism in parents and the creativity attainments of their children. The hypotheses were stated as the following:

Statement of Null Hypothesis:

A statement of null hypothesis (two tailed) existed for hypotheses 1 - 6.

5.1 Dogmatism (Mother & Father) and Creativity

Hypothesis 1: That there will exist no difference in creativity responses between children of high dogmatic parents (mother and father) and children of low dogmatic parents (mother and father) on the following variables:

a) total responses

b) unique responses

c) unique/total responses.

5.2 Dogmatism (Mother) and Creativity

Hypothesis 2: That there will exist no difference in creativity responses between children of high dogmatic mothers and children of low dogmatic mothers on the following variables:

a) total responses

b) unique responses

c) unique/total responses.

5.3 Dogmatism (Father) and Creativity

Hypothesis 3: That there will exist no difference in creativity responses between children of high dogmatic fathers and children of low dogmatic fathers on the following variables:

a) total responses

b) unique responses

c) unique/total responses.

5.4 Polynesian Parents and Creativity

Hypothesis 4: That there will exist no difference in creativity responses between the children of Polynesian mothers and the children of non Polynesian mothers on the following variables:

a) total responses

b) unique responses

c) unique/total responses.

Hypothesis 5: That there will exist no difference in creativity responses between the children of Polynesian fathers and the children of non Polynesian fathers on the following variables:

a) total responses

b) unique responses

c) unique/total responses.

Hypothesis 6: That there will exist no difference in creativity responses between the children of Polynesian parents (mother and father) and the children of non Polynesian parents (mother and father) on the following variables:

a) total responses

b) unique responses

c) unique/total responses.

The present study operationalized authoritarianism as dogmatism measured by the Rokeach D Scale (Rokeach, 1960.) Creativity was defined as the responses given to the Wallach and Kogan Creativity measure (Wallach & Kogan, 1965) over three indices:

a) total number of responses

b) unique responses

c) percentage unique of total responses (Unique/total.)

5.5 Statistical Procedures

Chi Square : A chi square frequency distribution was used to determine statistical relationships between the constructs

a) parent (mother and/or father) dogmatism,

b) child creativity[1].

Multivariate Analysis : The multivariate analysis procedure was conducted on Genstat V (Lawes Agricultural Trust, 1984), Massey University (Main Frame.) Three separate analytical sequences were conducted for the following sample groups:

1. All mothers with D Scale score (All Mothers)
2. All fathers with D Scale score (All Fathers)

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[1] "When N is between 20 and 40, the x^2 test...may be used if all expected frequencies are five or more." (Siegel 1956, p110.)

3. Both parents (mothers and fathers) with D Scale score.

Within each sample subgroup three (3) analyses were conducted for the three (3) creativity variables:

1. total responses
2. unique responses
3. unique/total responses.

Specific statistical analyses included:

1. correlation coefficient
2. regression coefficient
3. analysis of variance.

Trend Analysis : A scattergram trend analysis was employed with selected subgroup creativity/dogmatism relationships to illustrate perceived directions.

6. INSTRUMENTATION

6.1 Rokeach Dogmatism Scale (D Scale)

The Rokeach D scale Form E was used to quantify dogmatism levels within the parent sample. The instrument was used as published in the 40 item form (Rokeach 1960, p73.)

The D Scale was designed to measure open and closed mindedness. Rokeach (1960, p72) justified its use thus,

> "Because of the way we have defined Open and Closed ...the scale should also serve to measure general authoritarianism."

Dogmatism was seen as a measure of general authoritarianism independent of ideological content.

> "A closed way of thinking which could be associated with any ideology regardless of content, an authoritarian outlook on life, and intolerance toward those with opposing beliefs, and a sufferance of those with similar beliefs." (p4-5)

In other words, the D scale was designed to assess a belief structure as separate from belief content. The administration of the D Scale followed the directions stated in the manual (Rokeach, 1960.) Form E was the fifth and final revision of the instrument and was refined in this form to 40 items (see Appendix B.) The test was designed to be used in written form and subjects were asked to respond to each item by agreeing or disagreeing with the statement. Responses were indicated by one choice of six, ranging from +3 indicating strong agreement, to -3 indicating strong disagreement, there being no provision

for neutral responses. This forced the respondent to either agree or disagree with the statement.

When interpreting the responses, a loading number of +4 was added to each item and the totals were summed across the 40 items. High scores on the D scale indicated high dogmatism while low scores indicated low dogmatism.

Validity - To establish the instrument's validity (was the measure actually assessing what it purported to assess?) Rokeach assessed correlations(significant at .05 and .01 levels) between subjects judged by their peers as being extreme high and low dogmatics and their performance on the D scale (Rokeach, p108.) There was an observed similarity between D scale scores obtained in this instance and scores from the F and Ethnocentrism Scales (significant at p=.01) (Rokeach 1960, p104.)

Vacchiano et al (1967) and their investigations into three factor analyses of the D scale were cited by Ciurczak and Smith (1984, p376.)

> "The findings corroborated Rokeach's definition of the Dogmatism Scale and established empirical validity".

Reliability - The question of reliability (the consistency of the instrument to continue measuring the same construct) was addressed by Rokeach in the attempt to refine the instrument through 5 revisions: across 3 samples - 2 American and 1 English. Rokeach was confident of the instrument's reliability.

> "...The reliabilities of the final form of the Dogmatism Scale range from .68 to .93..."(Rokeach 1960, p89.)

The D scale was widely used in different cultures (Aviram and Milgram, 1977; Rokeach, 1960; Ager, 1970; Starbird & Biller, 1976; Ciurczak and Smith, 1984; Sexton, 1983; Aviram & Milgram, 1977; Williams, Harlow & Borgen, 1971 et al) and suggested a wide confidence in its value as an instrument. It was within this context that the instrument was used in the present study.

6.2 D Scale Use in New Zealand

There existed few published studies recording the use of the D Scale within New Zealand populations. It was suggested by Stacey (1977) that studies specifically addressing authoritarianism/dogmatism were few. Those that existed centred predominantly on the development, use and subsequent critiques of the Wilson-Patterson Conservation Scale (Wilson, 1973.)

Authoritarianism and conservatism were suggested (Ray, 1974; Eysenck, 1975) as sharing numerous characteristics.

> "...authoritarianism and conservatism...the former may be regarded as a somewhat more particular case of the latter." (Stacey 1977a, p37.)

The ideologically free nature of the D Scale was suited for use in the present study in comparison with the C Scale which addressed the more general construct, conservatism. Problems with the definition of conservatism led Stacey (1977, p112,113) to conclude regarding the use of the C Scale:

> "The C Scale (results) in an excessively constricted and imbalanced view of conservatism...Given the problems with the C Scale, conclusions about any facet of conservatism

> deriving from the use of the scale must be treated with extreme caution."

While the C Scale has been used within New Zealand, its acceptance has been questioned concerning issues of its validity as an instrument and its reliability across social class and religious affiliation boundaries (Stacey & Green, 1971; Kerlinger,1976;Bedggood, 1977 et al.) Stacey (1977b, p122) called for a wider approach to assessing social attitudes in New Zealand.

> "Further understanding of conservatism will depend upon increased definitional and conceptual clarity, the use of a wide range of empirical procedures in different target populations."

Following the direction of the literature, the D Scale was selected as suitable for a New Zealand population for the following reasons.

A. The D Scale purported to measure a specific ideologically free form of authoritarianism/dogmatism.

B. Extensive documentation existed to justify its uses in western cultures. (Published American and British norms were available which suggested its substantiation as being reliable cross-culturally.)

C. As the present study was the first such formal study conducted within the target population, specific published norms for any social attitude assessment instrument were unavailable. A previous informal study within a Seventh-day Adventist population (Hann, 1987) using the D Scale yielded New Zealand score patterns consistent with published norms (Rokeach, 1960.)

D. An absence of a measure of authoritarianism widely used and accepted in New Zealand populations necessitated the selection of an instrument which had the support of empirical studies.

6.3 Biographical Data

A brief biographical information sheet (Appendix B) entitled Parent Information was included with the D scale instrument to be completed by each parent subject. The purpose of this procedure was to construct a subject file from which relevant data could be extracted for the purposes of subgrouping. Specifically required for the study were the variables of gender, age, cultural and religious affiliation and solo/dual parent status.

6.4 Wallach and Kogan Creativity Instrument

The nature of creativity typified by intrinsic and spontaneous acts, posed a difficulty in assessment within a formalized and to some extent, an extrinsically motivated test environment.

Wallach and Kogan (1965) cited several studies (Thorndike, 1963; Cline, Richards and Abe, 1962; Flescher, 1963; Torrance, 1960; Yamamoto, 1964.) where traits purported to be creative were assessed by `creativity' instruments and had been so labelled but on closer examination, showed little correlational difference from traits attributable to general intelligence. In other words, instruments which purported to

assess creativity were in fact assessing a construct indistinguishable from general intelligence.

> "The present considerations suggest little warrant for conceptualizing a general cognitive dimension of creativity that is like the concept of general intelligence but exists apart from the latter". (Wallach and Kogan p12)

Wallach and Kogan's instrument was then designed and used for the purpose of identifying and measuring a separate dimension of creativity.

An associative concept of creativity formed the basic assumption behind the instrument's formation.

> "...Creativity most appropriately refers to the ability to generate or produce, within some criterion of relevance, many cognitive associates, and many that are unique. (Wallach and Kogan 1965, p24. Emphasis added.)

Though there was an apparent need for accurate assessing of creative abilities within a non-specialist setting such as a school environment, the authors designed their instruments on the assumptions that any meaningful creativity measure should be conducted ideally under the following conditions:

a) freedom from explicit and/or implicit time constraints which may restrict the number of unique responses[1].

b) freedom from situations where there is perceived evaluation and consequently, a `test for performance' situation

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[1]Wallach and Kogan (1965, p15 et seq) used Mednick's (1962) proposition that unique responses were often produced by a highly creative subject over an extended period of time. This was in comparison with a low creative response sequence where an initial high number of responses were not unique and the production rate subsequently suffered a high rate of decline. Consequently, the production of unique responses by a creative person may be repressed by an actual or perceived time limit.

is produced. This may encourage connotations of performing to prescribed or algorithmic criteria (Amabile 1983.)

c) an accepting environment where a subject is under no coercion of any type.

Wallach and Kogan (1965) used their instrument within their own research to provide a comprehensive empirical base for the following aims.

1. "Procedures that would assess generation and uniqueness of associates..."

2. "Demonstrate that productivity and uniqueness measures would be correlated..."

3. "To assess the conventional area of general intelligence..."

4. "To determine whether minimal interrelationship can be shown to exist between creativity measures...and general intelligence indices."

The validity of the instrument was strengthened by the authors' empirical findings which suggested that their instrument was able to isolate and identify a creative cognitive domain discrete from general intelligence, but comprising a separate entity, or body of traits.

Reliability - The reliability of the instrument was well established by the use of two procedures.

1. The calculation of reliability coefficients for each creativity variable was used by the instrument as an index of creativity. All variables tested for reliability yielded better positive relationships than 0.50, most being in excess of 0.80, indicating a high level of internal consistency (Wallach and Kogan Table 1, p41-42.)

2. Reliability was also established by an item-sum correlation procedure. This assessed the degree to which each item in the instrument was related to the remainder of the item cohort. Item-sum correlations showed a strong relationship of >0.60 (71 of 78 items.)

Wallach and Kogan Creativity Assessment Instrument: Brief Description

The instrument consisted of five (5) types of associates:

1. Instances
2. Alternate uses
3. Similarities
4. Pattern meanings
5. Line meanings.

A number of items were presented within each associate category of which the present study utilized the following:

Associate Category : Instances

Item 1 : Write down all the things you can think of that move on wheels.

Item 2 : Write down all the different ways you could use a knife.

Associate Category : Alternate uses

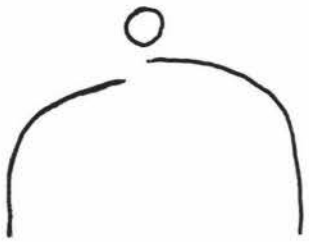
Item 3 : Write down all the different ways you could use a chair.

Associate Category : Similarities

Item 4 : Write down all the ways in which a cat and a mouse are alike.

Associate Category : Pattern meanings

Item 5 : Write down all the things this shape makes you think of.

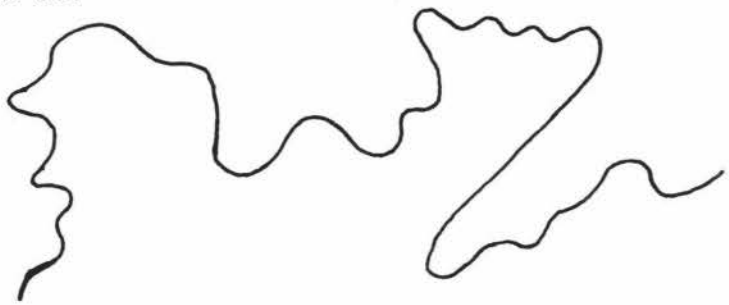


Item 6 : Write down all the things this shape makes you think of.

Associate Category : Line meanings

Item 7 : Write down all the things these lines make you think of.

Item 8 : Write down all the things these lines make you think of.



(Wallach & Kogan p28 et seq)

The responses elicited by each subject were recorded under each item (1 - 8) and filed under the subject's name. Three (3) creativity variables were recorded for each item and summed across the instrument to form a composite subject score for each variable.

The creativity variables were consistent with those recorded by Wallach and Kogan.

Variable 1 : Total number of responses across 8 items by the subject (designated `total'.) This was defined by the authors (p30) as

> "...the total number of responses given by a child to a particular item."

Variable 2 : Unique responses of subjects to each item (designated as `unique'.) This variable was defined as `one of a kind' (p30.) Any response of which there was only one was recorded as a unique response. The uniqueness score was obtained by summing the subject's uniqueness score across all items.

Variable 3 : Percentage of unique responses to total responses (designated `unique/total'.) This variable was defined as the percentage of total responses which were designated unique. This variable, while not used in the original Wallach and Kogan study, proved to have high correlations with variables 1 and 2 (.61 and .88 respectively for child sample `mothers only', .58 and .87 respectively for child sample `fathers only' and .57 and .87 for child sample`both parents'.)

Determination of Uniqueness - The uniqueness of each response was determined by recording the response and by which subject it was made. Each different response was recorded on a separate card along with the names of the respondents making the given response. At the conclusion of collation for each item, any response card with only one respondent recorded was regarded as unique. This procedure was followed for each item across the child sample cohort. Responses were then summed for each subject whose creativity scores were then recorded over the three creativity variables. Recorded for each subject were three creativity variables:

a) total responses

b) unique responses

c) unique/total responses.

7. METHODOLOGY

7.1 Procedural Sequence: Summary

1. Identify research population.

2. Isolate specific sample.

3. Assess dogmatism levels in parent sample [parents of children 10 - 16 years, D Scale (Rokeach, 1960)]

4. Assess child creativity (10 - 16 years) (Wallach & Kogan, 1965.)

5. Collate data and conduct chi square and multivariate analyses.

6. Record quantitative results.

7. Discuss and advance implications.

7.2 Population Characteristics

Sample Age Group - The present study involved assessing the creativity attainment levels of a particular sample of children between the ages of 10 and 16 years. This age group was selected with several considerations in view.

1. Wallach and Kogan (1965) (see Instrumentation) designed and used their instrument successfully with individuals aged 10 - 16 years. The authors proposed that

> "...the general age of ten or eleven was sufficiently advanced for children to possess the requisite verbal skills for dealing with instructional context." (p 26)

2. McHenry and Shouksmith's (1970) research, in addressing the concepts of creativity and suggestibility, proposed that after about 10 - 11 years the trait of

suggestibility[1] diminished and was replaced in part by an ability or willingness to respond to situations calling for individuality. Implicit was the notion that creativity (in the sense of individuality provoking the crossing of perceived cognitive boundaries) developed during and following this development phase. This was supported by Smith & Carlsson (1983, 1985) who suggested that creativity was not possible at ages prior to 10 - 11 years.

7.3 Sample Selection

The children selected for the study were included in a larger population of families whose children attended two specific schools situated within the South Auckland geographic region.

1. School #1. This New Entrant to Form 2 school with a roll of approximately 180 was situated in South Auckland. The students were drawn from a range of geographical locations outside the immediate vicinity. There was a distinct multi-cultural environment and a corresponding range of socio-economic and ethnic backgrounds.

2. School #2. This school was also situated in South Auckland. A Form 3 to 7 secondary school, it attracted students from the greater Auckland region. The roll was approximately 150. There was a similar range of socio-economic

[1]McHenry and Shouksmith used the term suggestibility as synonymous with gullibility (Thurstone, 1952.) It was also termed as the degree of openness of an individual to social pressure (Wallach & Kogan 1970, p154 et seq.)

student family backgrounds (See Appendix E) to those found in School #1.

Both schools were owned and operated by the North New Zealand Conference of Seventh-day Adventists as denominational schools. They were recognised by the New Zealand government as registered schools and were included in the schools visited by the state inspectorate. Teachers were qualified with appropriate New Zealand recognised academic qualifications[2]. The child sample was not exclusively Seventh-day Adventist. However, the ratio of non Seventh-day Adventists (S.D.A.) was consistent with an official common policy in the S.D.A. education system which limited the number of non-members to 15% of the total enrolment. Hence the majority of children in the sample were from nominally S.D.A. homes. Other religions represented in the sample cohort included Anglican, Roman Catholic, Presbyterian, Latter-day Saints while several families stated "nil religion."

7.4 Environmental Factors

Cultural Influences - The South Auckland geographic region was a rapidly expanding metropolitan area with corresponding population increase. A large population of Pacific Islanders was resident, contributing to the special nature of the region's demography and was reflected in the numbers of Pacific Islanders in the study population.

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[2]The exceptions being some probationary assistant and Australian qualified teachers who, at the time, did not possess a New Zealand certificate of registration.

Slightly less than 50% of the parent sample regarded themselves as being Pacific Islanders. There was however, no distinction made between parents' perception of themselves as culturally, as well as ethnically, Pacific Islanders.

The present research did not attempt to address the effects the length of residence in New Zealand may have had on the cultural perceptions and belief structure characteristics of individuals. The Polynesian cultural factor was anticipated however and included as a discrete variable within the multivariate analysis.

Religious Subculture - While acknowledging the affiliation of members in the population to various religious groups, the dominant religious milieu of the families was Seventh-day Adventist.

Marino (1968, p19-20) argued that in general, religious groups tended to exhibit or encourage characteristics that were consistent with authoritarian/dogmatism. Specifically,

> "Authoritarian submission: A submissive, uncritical attitude toward idealized moral attitudes of the `in-group'."

In terms of religiosity and its implications, the study attempted to address within a discussion context:

a) the effect of any ideological factors on the variables dogmatism and creativity and their hypothesized relationship

b) the extent to which the characteristics of the belief structure in the sample population were typical of wider populations.

The methodology was based on the assumption that the study population conformed to a conservative religious subculture containing beliefs, attitudes and ideological characteristics.

7.5 Parent Cohort

All parents of children age 10-16 years who attended either school #1 or school #2 were included in the research parent sample. It was intended that all parents within the sample complete the Rokeach D Scale instrument (assessing dogmatism levels) and a brief biographical inventory (see Instrumentation.)

D-Scale Administration - The D-Scale instrument was administered via the administration of each school. A total of 134 D-Scale instruments were issued targeting both male and female parents of all children in the selected age grouping. Of the total instruments issued, 95 were returned, 49 not being returned, thus a 70% response rate was achieved. Both parents were requested to complete the D Scale and dogmatism levels were obtained from 88 parents. Eight (8) of the instruments returned were found to be incomplete or incorrectly filled out, necessitating their exclusion from the sample group.

Dogmatism Grouping - A Rokeach D Scale score was obtained for each parent and the mean score was calculated for the whole group. The mean dogmatism score obtained for the complete parent sample was 170. There was no distinction made in practice between what could be regarded as `male' dogmatism or `female' dogmatism. This approach was consistent with

Rokeach's (1960, p90) published norms where means and standard deviations were calculated across groups, male and female inclusive.

For the purposes of this study, those parents with scores above the group mean were categorized as being within the high dogmatic sample. Parents obtaining a score lower than the group mean were included in the low dogmatic sample. This procedure ensured sufficient cell sizes when the sample was categorized into subgroups.

7.6 Creativity Assessment

The children of parents with obtained D Scale scores were tested for creativity approximately one month later in their school situation. This approach was intended to capitalize on the routine nature of their school day thus allaying connotations of testing, performance or examination. The children were assessed in two separate groups. Both groups were given the same creativity instrument.

School #1: (10 - 13 years of age) Subjects were assessed as a group in an informal environment where they were encouraged to sit individually. A preamble was designed to suit the lower age group and to develop a rapport between the researcher and subjects.

The researcher emphasized there would be no time constraints nor was the instrument a test for intelligence. The researcher was present throughout both assessments.

School #2: (13 - 16 years of age) The researcher introduced himself, the instrument and instructions informally.

There were no time constraints, motivation by the subjects appeared to be high and rapport between the researcher and students was readily established.

7.7 Creativity Test Scoring

Directions for scoring the Wallach & Kogan (1965) instrument were standardized by the authors (p28 et seq.) Correct scoring depended on:

a) recording and noting the names of subjects who responded with a particular response,

b) determining unique responses as being `one of a kind'

c) counting total responses.

Scoring of the creativity instrument was conducted by the author of this report. Competency in scoring was gained by firstly, familiarization with the written directions and secondly, by its use in a previous small scale study (Hann, 1987.)

7.8 Manipulation of Data

Three values of creativity were obtained and recorded for each child:

Variable 1. total responses

Variable 2. unique responses

Variable 3. unique of total responses.

These were regarded as creativity indices and were used for the purposes of the study as indicating the level of creativity attained by each subject.

Means were calculated for each of the three variables across the sample of children. Subjects with creativity indices scoring above the mean were labelled High Creativity. Those subjects scoring below the group mean were labelled Low Creativity. This procedure was designed to isolate high and low scoring subgroups for the purpose of determining a relationship between high and low dogmatic parents and high and low creativity attainment in the children.

For both the chi square and multivariate analyses, three separate statistical analyses were conducted, corresponding with the three creativity variables.

7.9 Statistical Procedure

Three statistical procedures were employed in the study:

1. Chi Square Frequency Distribution
2. Multivariate Analysis
3. Trend Analysis Scattergram (least squares approximation.)

Chi Square Frequency Distribution - Chi square was employed to ascertain whether or not a two-tailed dependent relationship existed statistically between the variables dogmatism and creativity.

This procedure was conducted in two (2) parts across the three creativity variables.

1. Creativity responses of children with two (2) parents responding to the D Scale.

Table I: Total creativity responses of children with two (2) parents responding to the D Scale.

Table II: Unique responses of children with two (2) parents responding to the D Scale.

Table III: Unique/total responses of children with two (2) parents responding to the D Scale.

2. Creativity responses of children with one (1) parent responding to the D Scale.

Table IV: Total creativity responses of children with one (1) parent (Mother) responding to the D Scale.

Table V: Unique creativity responses of children with one (1) parent (Mother) responding to the D Scale.

Table VI: Unique/total creativity responses of children with one (1) parent (mother) responding to the D Scale.

Table VII: Total creativity responses of children with one (1) parent (father) responding to the D Scale.

Table VIII: Unique creativity responses of children with one (1) parent (father) responding to the D Scale.

Table IX: Unique/total creativity responses of children with one (1) parent (father) responding to the D Scale.

The standard 2 x 2 tabular format and chi square was used to indicate dependence (a hypothesized inverse relationship between dogmatism and creativity.) This statistical procedure was used to make statements which supported either acceptance or rejection of the null hypothesis.

Multivariate Analysis - Multivariate analysis was used to confirm the results of the chi square analysis and gain indications of relationships between the variables of dogmatism and creativity within the subgroups of the total sample. These included children from parents in the following groupings:

Subgroup 1. All mothers responding to the D Scale.

Subgroup 2. Mothers (only) responding to the D Scale.

Subgroup 3. Non-polynesian mothers responding to the D Scale.

Subgroup 4. All Fathers responding to the D Scale.

Subgroup 5. Fathers (only) responding to the D Scale.

Subgroup 6. Non-polynesian fathers responding to the D Scale.

The creative attainments of children from parent Subgroups 1 to 6 were compared statistically using multivariate analysis. This was intended to expose the direction of positive or negative relationships between the variables of dogmatism and creativity and attempt to identify any specific variations in relationships between the variables.

The intention was to establish a relationship magnitude and directions for the purpose of discussing the issue of causation between dogmatism and creativity, specifically:

a) the possible effects of mother dogmatism on creativity attainment of their children,

b) the possible effect of father dogmatism on creativity attainments of their children,

c) the respective effect of mother or father dogmatism in a dual parent unit on the creativity attainments of their children,

d) the effect of Polynesian parenting on the creativity attainments of their children.

A multivariate analysis was conducted for the three stated creativity indices.

The following specific procedures were conducted for each creativity index:

a) correlation co-efficient.

b) regression co-efficient.

c) analysis of variance.

Trend Analysis - Scattergrams were used to indicate how the data in the series was changing, in other words, the direction of any trend evident in a particular relationship. These were calculated by least square approximation and plotted as a best fit line on a scattergram table.

The following sample subgroups were used to illustrate the directions of relationships between dogmatism and creativity. The variable illustrated was unique/total responses.[3]

Figure 1A: Father dogmatism - daughter creativity

Figure 1B: Father dogmatism - son creativity

Figure 2A: Mother dogmatism - daughter creativity

Figure 2B: Mother dogmatism - son creativity

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[3]The creativity variable selected was consistent with prior statistical procedures which suggested that this variable best illustrated relationships evident in the data.

[4]This included both sons and daughters.

8. RESULTS

The empirical component of the research consisted of three approaches:

1. chi square testing of frequency distributions
2. multivariate analysis
3. scattergram trend analyses were used as an illustrative device.

To reject the null hypothesis of independence for the following contingency tables, a chi square value exceeding 3.84 (df = 1) was needed at the 0.05 level of significance.

8.1 Chi Square Analyses

Three (3) responses or creativity variables were scored and recorded for all children tested:

1. Creativity Variable: Total Responses (Total.)
2. Creativity Variable: Unique Responses (Unique.)
3. Creativity Variable: Percentage Unique of Total Responses (Unique/Total.)

Hypothesis 1: That there will be no difference in creativity responses between children of high dogmatic parents (mothers and fathers) and low dogmatic parents (mothers and fathers.)[1]

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[1]Mixed dogmatism in parents - where mothers and fathers of the parent families exhibited mixed dogmatism levels (ie high dogmatism level in father and low dogmatism level in mothers or vice versa) they were termed `mixed'. There were insufficient numbers to constitute viable cell sizes in the Chi Square analysis. The `mixed' category was consequently omitted.

TABLE I Frequency Distribution

Total Creativity Responses of Children with Two (2) Parents Responding to the D Scale

TOTAL CREATIVITY RESPONSES	Dogmatism High Mother High Father	Dogmatism Low Mother Low Father	Total
High	7	6	13
Low	8	5	13
Total	15	11	26

Chi Square = .1575 df = 1
p = 0.6914149

Table I showed an observed value of chi square (.1575) which did not exceed the significant tabular value (X^2 = 3.84 at 0.05 level.) This result supported the null hypothesis of no difference between the total creativity responses of children with high dogmatic parents and children with low dogmatic parents.

TABLE II Frequency Distribution

Unique Creativity Responses of Children with Two (2) Parents Responding to the D Scale

UNIQUE RESPONSES	Dogmatism High Mother High Father	Dogmatism Low Mother Low Father	Total
High	6	6	12
Low	9	5	14
Total	15	11	26

Chi Square = .54026 df = 1
p = .4623

Table 2 indicated a result which did not attain significance (0.05) having a chi square value of $X^2 = .5402$. The variables (Unique Creative Responses and Parent Dogmatism) could therefore be regarded as independent. The null hypothesis was therefore accepted.

TABLE III Frequency Distribution

Unique/Total Responses from Children with Two (2) Parents Responding to D Scale

UNIQUE/ TOTAL RESPONSES	Dogmatism High Mother High Father	Dogmatism Low Mother Low Father	Total
High	6	7	13
Low	9	4	13
Total	15	11	26

Chi Square = 1.4181 df = 1

p = .2337

Table 3 indicated, as with Tables I and II, independence between the two variables and thus confirmed the Null Hypothesis. It should be noted however, that the result showed some direction toward dependence when noting comparative results (Tables 1 - 3.)

Part Two - Creativity Responses of Children with One (1) Parent Responding to the D Scale

Hypothesis 2: That there will exist no difference in creativity responses between children of high dogmatic mothers and children of low dogmatic mothers.

TABLE IV Frequency Distribution

Total Creativity Responses of Children with Mothers Responding to the D Scale

TOTAL CREATIVITY RESPONSES	High Dogmatic Mother	Low Dogmatic Mother	Total
High	14	8	22
Low	11	11	22
Total	25	19	44

Chi Square = .8336 df = 1

p = .3612

Table IV showed a chi square value (.8336) which indicated that dogmatism and creativity were independent (0.05 significance level.) The notion of independence between dogmatism of mothers and the total creative responses of their children was supported by the results of Table IV. The null hypothesis was therefore accepted.

TABLE V Frequency Distribution

Unique Creativity Responses of Children with Mothers Responding to the D Scale

UNIQUE RESPONSES	High Dogmatic Mothers	Low Dogmatic Mothers	Total
High	13	8	21
Low	12	11	23
Total	25	19	44

Chi Square = .4237 df = 1

p = .5150

Table V indicated a chi square value (.4237) less than the significance value (at 0.05 level) between the variables of unique creativity responses and mother dogmatism. The null hypothesis was therefore accepted.

TABLE VI Frequency Distribution

Unique/Total Creativity Responses of Children with Mothers Responding to the D Scale

UNIQUE/ TOTAL RESPONSES	High Dogmatic Mother	Low Dogmatic Mother	Total
High	13	10	23
Low	12	9	21
Total	25	19	44

Chi Square = .0017 df = 1

p = .9668

Table VI confirmed a state of independence between unique/total responses and mother dogmatism. There existed a chi square value (.0017) below that required for the level of significance (0.05) and therefore the hypothesis was accepted.

Hypothesis 3: That there will exist no difference in the creativity responses between children of high dogmatic fathers and children and low dogmatic fathers.

TABLE VII Frequency Distribution

Total Creativity Responses of Children with Fathers Responding to the D Scale

TOTAL CREATIVITY RESPONSES	High Dogmatic Father	Low Dogmatic Father	Total
High	10	10	20
Low	12	12	24
Total	22	22	44

Chi Square = 0 df = 1

p = 1.0

Table VII exhibited a chi square value of zero and thus confirmed the independence (at 0.05 level) between total creativity responses of children and father dogmatism. The null hypothesis was therefore accepted.

TABLE VIII Frequency Distribution

Unique Creativity Responses of Children with Fathers Responding to the D Scale

UNIQUE CREATIVITY RESPONSES	High Dogmatic Fathers	Low Dogmatic Fathers	Total
High	9	10	19
Low	13	12	25
Total	22	22	44

Chi Square = 0.0926 df = 1

p = .7608

Table VIII indicated a chi square value (0.0296) that fell below the value needed for significance (3.84 at the 0.05 level) between the variables unique creativity responses of children and father dogmatism. The null hypothesis was therefore accepted.

TABLE IX Frequency Distribution

Unique/Total Creativity Responses of Children with Fathers Responding to the D Scale

UNIQUE/ TOTAL RESPONSES	High Dogmatic Father	Low Dogmatic Father	Total
High	10	11	21
Low	12	11	23
Total	22	22	44

Chi Square = 0.0910 df= 1

p = .7627

Table IX indicated a chi square value (.0910) which did not attain significance (3.84 at 0.05 level) thus supporting independence between the variables unique/total creativity responses and father dogmatism. The null hypothesis was therefore accepted.

Indications: Statistically, the relationship between the variables of parent dogmatism (father/mother combinations and single parents) and creativity attainments of their children did not reach significant levels. However, it was interesting to note that the frequency distributions for mothers (Tables IV - VI) showed some contrast with those displayed in the father's distribution frequency tables (Tables VII - IX.) The results for mothers illustrated a direction toward a dependent relationship between the variables of mother dogmatism and child creativity responses. This suggested a slight quantitative indication of support for the alternate hypotheses of dependence. The results for `fathers' showed no such trend.

8.2 Multivariate Analyses

The data accumulated from the test population was subjected to a series of multivariate analyses.

Child Creativity and Mother Dogmatism

i) Hypotheses 2: That there will exist no difference in creativity responses between children of high dogmatic mothers and children of low dogmatic mothers on the following variables:

a) total responses

b) unique responses

c) unique/total responses.

ii) Hypothesis 4: That there will exist no difference between the creativity responses of Polynesian mothers and the children of non-polynesian mothers on the following indices:

a) total responses

b) unique responses

c) unique/total responses.

TABLE X

Correlation Matrix : Mother Sample
All Mothers Responding to the Questionnaire

DF = 42 n = 44

1	1.0000					
2	0.8671	1.0000				
3	0.6112	0.8856	1.0000			
4	0.0802	0.0367	0.1138	1.0000		
5	0.1277	0.0741	-0.0030	0.1627	1.0000	
6	-0.1457	-0.1650	-0.1856	-0.0429	-0.2272	1.0000
	1	2	3	4	5	6

Key : 1 = Total Creativity Responses
2 = Unique Creativity Responses
3 = Percentage Unique Responses to Total Responses
4 = Mothers (only) in sample
5 = Non Polynesian Mothers
6 = Mother Dogmatism

Table X exhibited no statistically significant relationships between mother dogmatism levels and the three stated variables of child creativity. Hypotheses two and four were therefore accepted.

The correlations between mother dogmatism and creativity (Table X) were not statistically significant. However, there was indication that the two constructs were related beyond a random level. The correlations obtained were:

a) mother dogmatism/total responses (-0.1457)

b) mother dogmatism/unique responses (-0.1650)

c) mother dogmatism/unique/total responses (-0.1856)

An indication of progression toward a significant inverse relationship was noted from this result. This was supported by Hann (1987) where a similar inverse relationship was noted. In that instance, a statistically significant result was obtained between the constructs of mother dogmatism and unique/total creativity responses.

> "A t value of 2.379...gives a 96% confidence that the difference is significant (between) high and low dogmatic groups (mothers) in the unique/number percentage comparison."
>
> (Hann 1987, p36)

Child Creativity and Father Dogmatism

Hypotheses 3: That there will exist no difference in creativity responses between children of high dogmatic fathers and children of low dogmatic fathers on the following variables:

a) total responses

b) unique responses

c) unique/total responses.

Hypothesis 5: That there will exist no difference in creativity responses between children of Polynesian fathers and children of non-polynesian fathers on the following indices:

a) total responses

b) unique responses

c) unique/total responses.

TABLE XI Correlation Matrix : Father Sample
All Fathers Responding to the Questionnaire

DF = 42

1.	1.0000					
2.	0.8637	1.0000				
3.	0.5840	0.8789	1.0000			
4.	0.0625	-0.0081	-0.0058	1.0000		
5.	0.1052	0.0857	0.0469	0.0417	1.0000	
6.	-0.0591	-0.0594	-0.0276	0.2400	-0.3012	1.0000
	1	2	3	4	5	6

Key : 1 = Total Creativity Responses
2 = Unique Creativity Responses
3 = Percentage of Unique to Total Creativity Responses
4 = "Fathers only" responding in sample population
5 = Non-polynesian fathers
6 = Father dogmatism (all fathers)

No statistically significant results were obtained for polynesian and non-polynesian father subgroups when correlated against the three variables of creativity. Hypotheses three and five were therefore accepted.

In contrast to mother dogmatism (Table X) the corresponding father sample correlates (Table XI) do not differ from randomness. This indicated a difference in the respective effects of dogmatism in fathers and mothers on the creativity of their children. The correlation coefficient levels suggested a move in the direction of high dogmatism in mothers being associated with low creativity responses in their children. In contrast, Table XI illustrated no such direction between father dogmatism and the tested creativity variables.

Child Creativity and Combined Parent Dogmatism

i) Hypothesis 1: That there will exist no difference in creativity responses between children of high dogmatic parents (mother and father) and children of low dogmatic parents (mother and father) on the following variables:

a) total responses

b) unique responses

c) unique/total responses.

ii) Hypothesis 6: That there will exist no difference in the creativity responses between children of polynesian parents (father and mother) and the children of non-polynesian parents (father and mother) on the following variables:

a) total responses

b) unique responses

c) unique/total responses.

TABLE XII

Correlation Matrix : Both Parents Responding to the Questionnaire (Fathers & Mothers)

DF = 28

1.	1.0000					
2.	0.8681	1.0000				
3.	0.5751	0.8785	1.0000			
4.	-0.1897	-0.2220	-0.2724	1.0000		
5.	-0.1925	-0.1973	-0.2146	0.7053	1.0000	
6.	0.1670	0.1581	0.1030	-0.2185	-0.2496	1.0000
	1	2	3	4	5	6

Key : 1 = Total Creativity Responses
2 = Unique Creativity Responses
3 = Unique/Total Creativity Responses
4 = Mother dogmatism
5 = Father dogmatism
6 = Non polynesian sub group.

Table XII yielded several important items. Mother dogmatism, consistent with the results shown for Table X, also showed negative correlations with the three (3) creativity variables assessed (-0.1897, -0.2220, -0.2724.) The unique/total variable showed a marginal strength advantage over

the other two variables. No results however, approached significance, prompting acceptance of the null hypothesis.

8.3 Father/Mother Dogmatism Correlation

Father dogmatism and mother dogmatism showed a positive relationship in Table XII (0.7053.) This indicated that most mother/father combinations in the sample had corresponding dogmatism levels. In other words, it was relatively rare for one parent to be a high dogmatic and the spouse low dogmatic or vice versa.

Summary The statistical analyses provided only marginal statistical evidence in support of the alternative hypotheses. However, patterns were identified that indicated a direction toward an inverse relationship between mother dogmatism and the creativity variable Unique/Total responses.

It could be stated that where low mother dogmatism levels occurred, it was slightly more likely the creativity levels occurring in their children would be higher. Conversely, where high mother dogmatism levels occurred, it was statistically slightly more likely that the corresponding child creativity levels would be lower.

The statistical analysis used in the study was intended to indicate the direction of statistical relationships between the experimental variables dogmatism and creativity. These were demonstrated in the main part to be non-significant statistically. There were indicators that emerged however, that pointed in the hypothesized direction, that is, creativity levels were likely to be lower when interacting with high

dogmatic, socially significant others (eg teachers, parents, grandparents.)

8.4 Scattergram Trend Analysis: Illustration and Directions

The scattergram trend analyses were used to illustrate the direction of relationships identified by the chi square and multivariate analyses. While no result in these analyses approached statistical significance, several indications became evident between dogmatism and the creativity variable unique/total. Tables 1 - 4 were graphed to illustrate the pertinent trends.

Of particular interest were the indications suggesting that creativity was evident in differing magnitudes over a range of relationships across subgroups of parental dogmatism.

Child Creativity Figures One and Two indicated creativity attainments involving female and male children respectively. Trends showed daughter creativity to be in an inverse relationship with mother dogmatism. Simply put, this suggested that daughters tended to exhibit lower creativity attainments when their mothers were highly dogmatic. The trend was less pronounced for daughter creativity and father dogmatism (Figure 1A) although an inverse relationship was still apparent.

Contrary to the above trends were sons' creativity levels in relation to parent dogmatism. A minimal level of relationship was evident between the creativity of sons in relation to mother dogmatism (Figure 2B.) Sons' creativity

attainments showed a trend suggesting a slight positive relationship with father dogmatism (Figures 3A and 3B.)

A summary of mother and father dogmatism respectively, in relation to their children (sons and daughters) showed a difference in relationships (Figure 4.) There was a marked indication of an inverse mother dogmatism-child creativity relationship which was less pronounced in the father dogmatism-child creativity relationship.

Summary of Trend Analyses

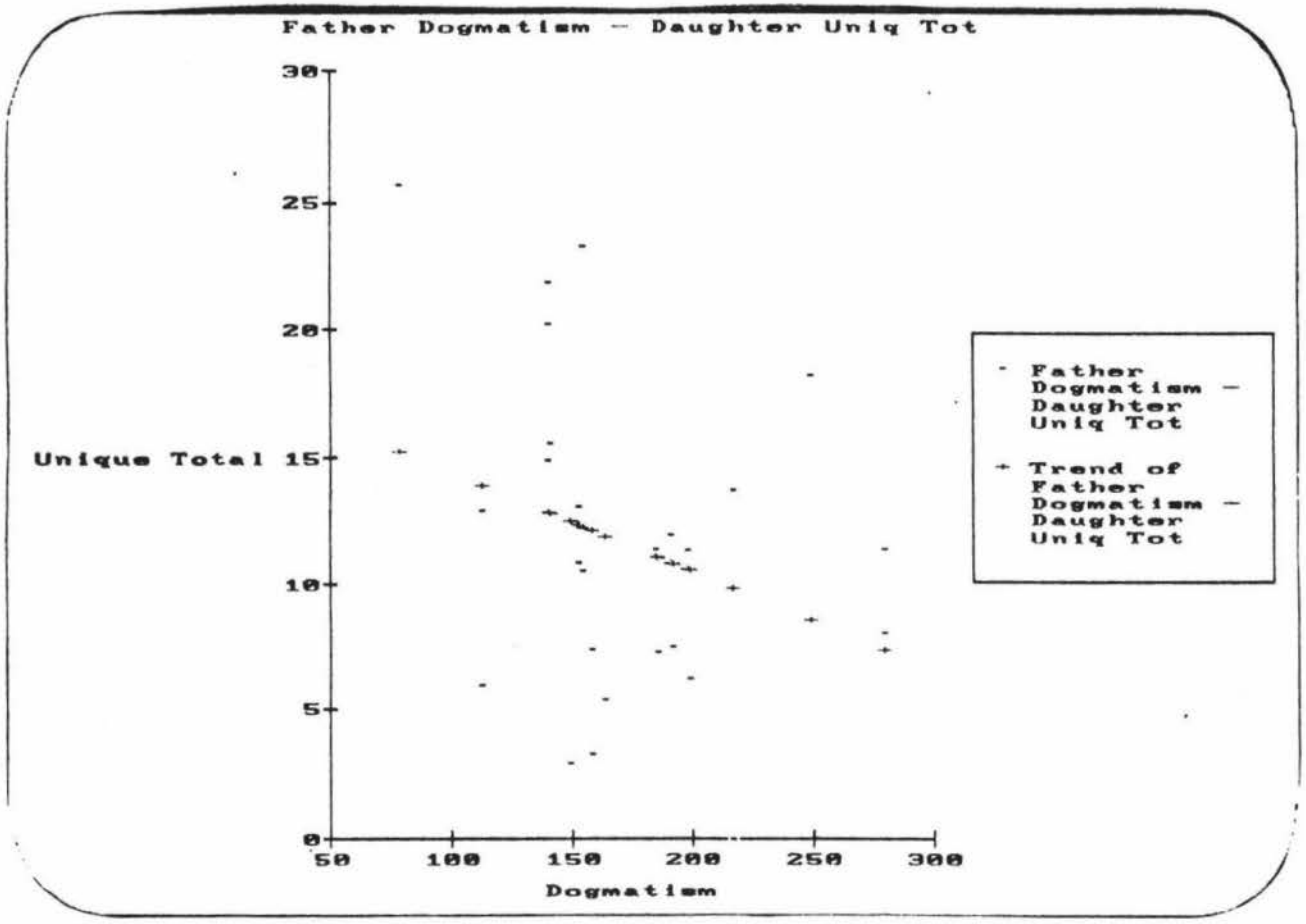
1. There existed an inverse relationship between the creativity attainments of daughters and mother dogmatism.

2. A low magnitude inverse relationship was evident between daughter creativity and father dogmatism.

3. Mother dogmatism and the creativity of sons showed a near random relationship.

4. Father dogmatism and the creativity of their sons evidenced a positive relationship trend.

5. Trend analysis indicated a higher overall inverse relationship between mother dogmatism and creativity than between father dogmatism and creativity.


Father Dogmatism - Daughter Uniq Tot
Unique Total
30
25
20
15
10
5
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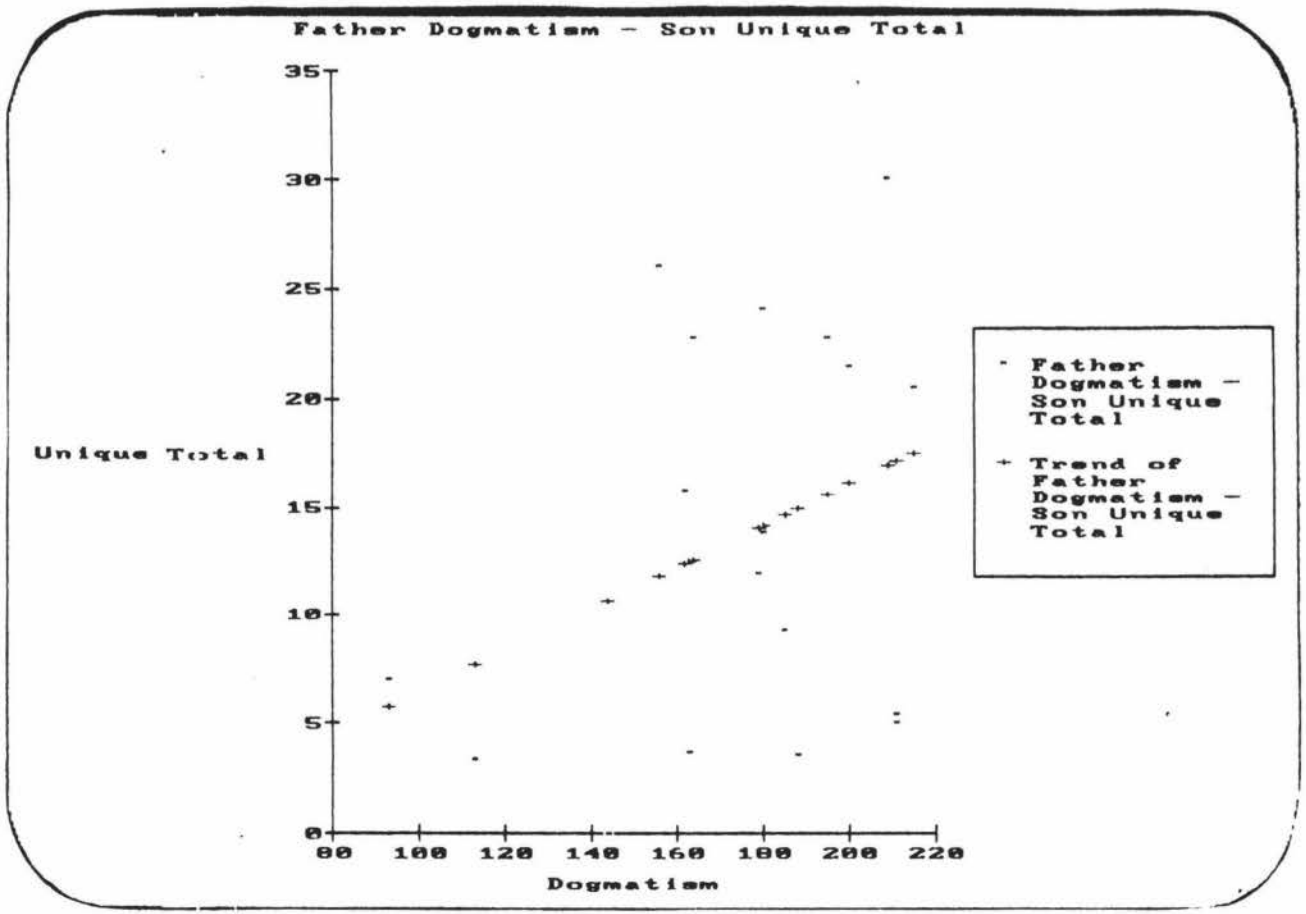
300
Dogmatism
Father Dogmatism - Daughter Uniq Tot
Trend of Father Dogmatism - Daughter Uniq Tot

Fig Ia


Father Dogmatism - Son Unique Total
Unique Total
35
30
25
20
15
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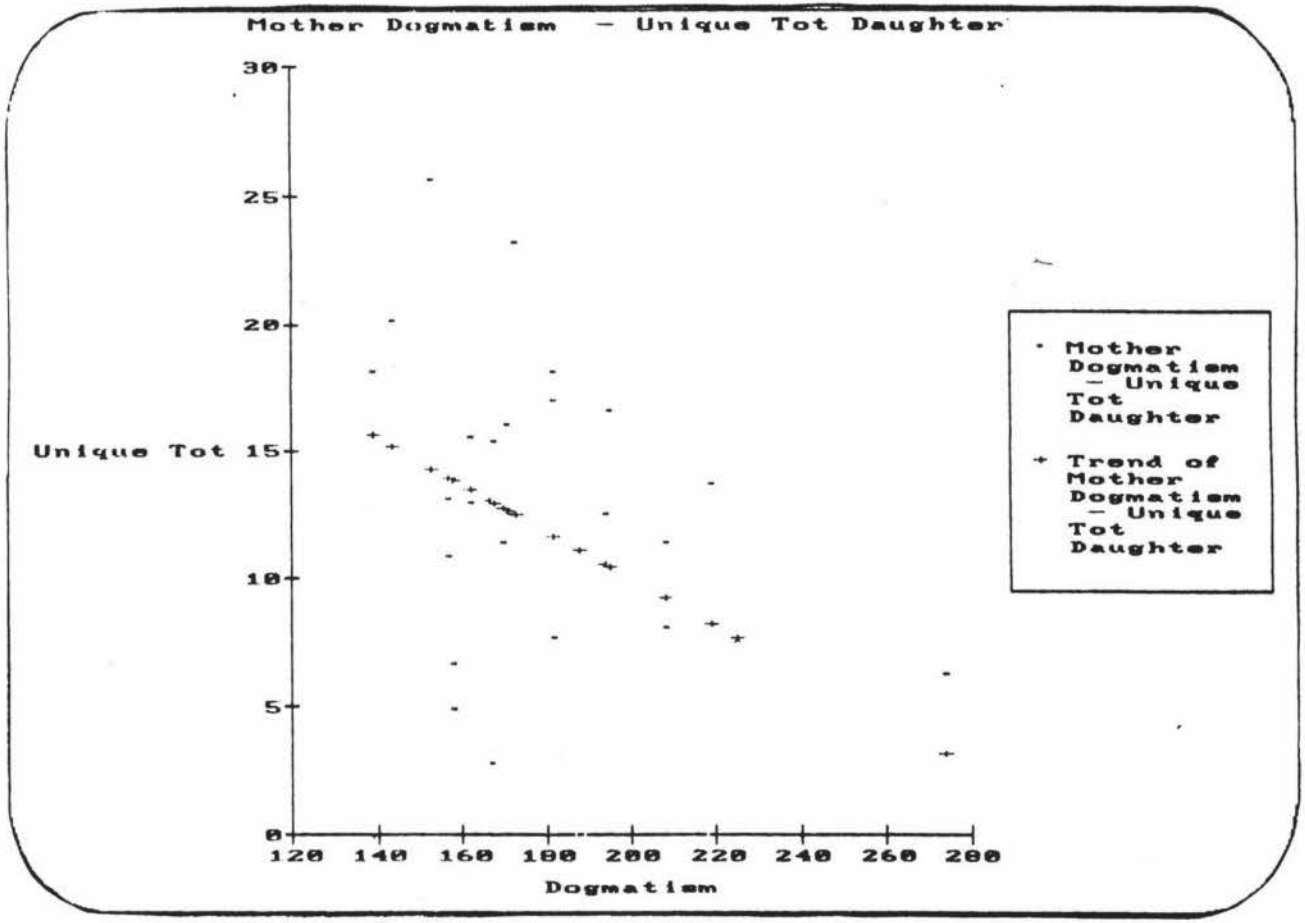
220
Dogmatism
Father Dogmatism - Son Unique Total
Trend of Father Dogmatism - Son Unique Total


Mother Dogmatism – Unique Tot Daughter
Unique Tot
30
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120
140
160
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220
240
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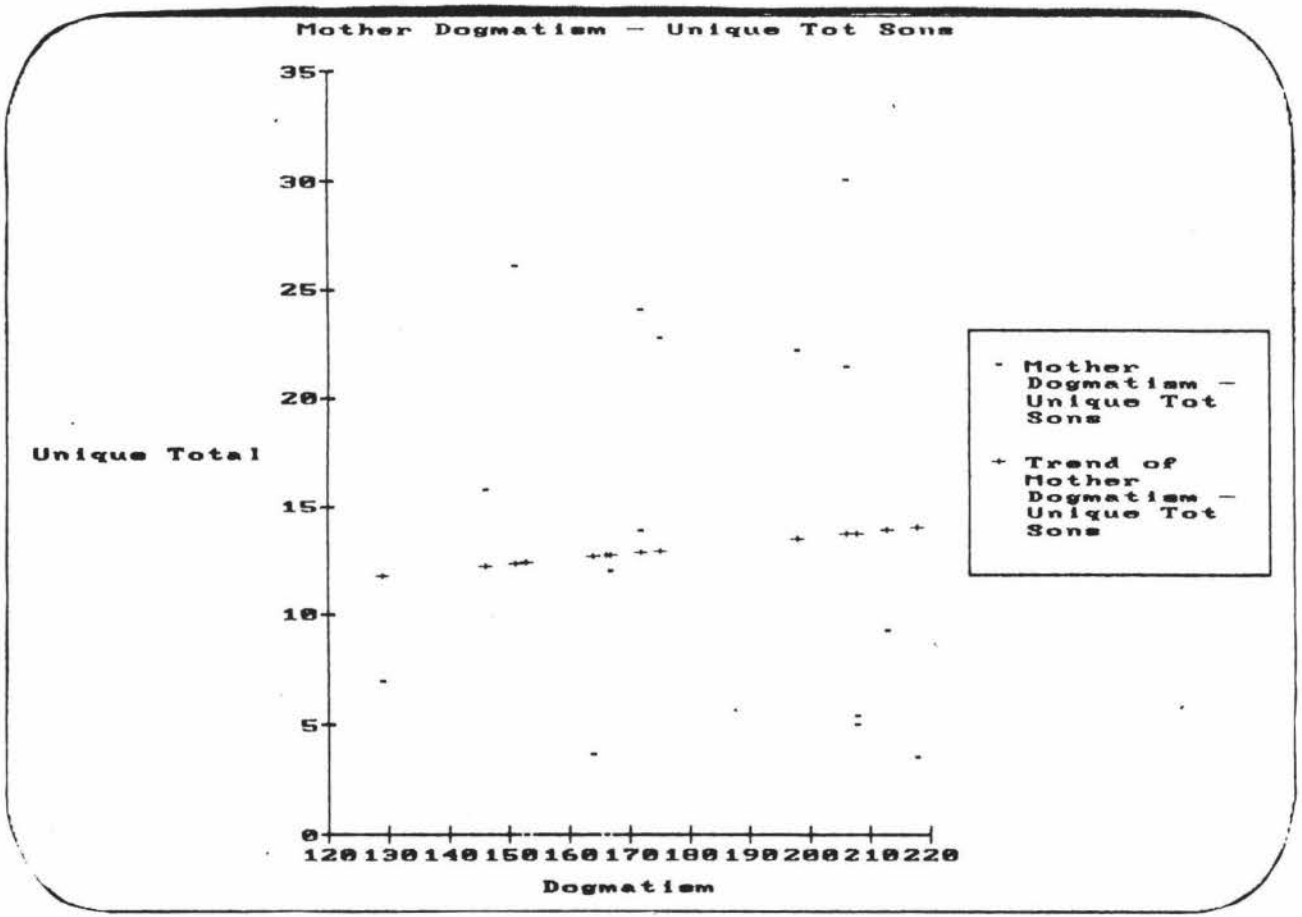
280
Dogmatism
Mother Dogmatism – Unique Tot Daughter
Trend of Mother Dogmatism – Unique Tot Daughter

Fig 2a


Mother Dogmatism – Unique Tot Sons
Unique Total
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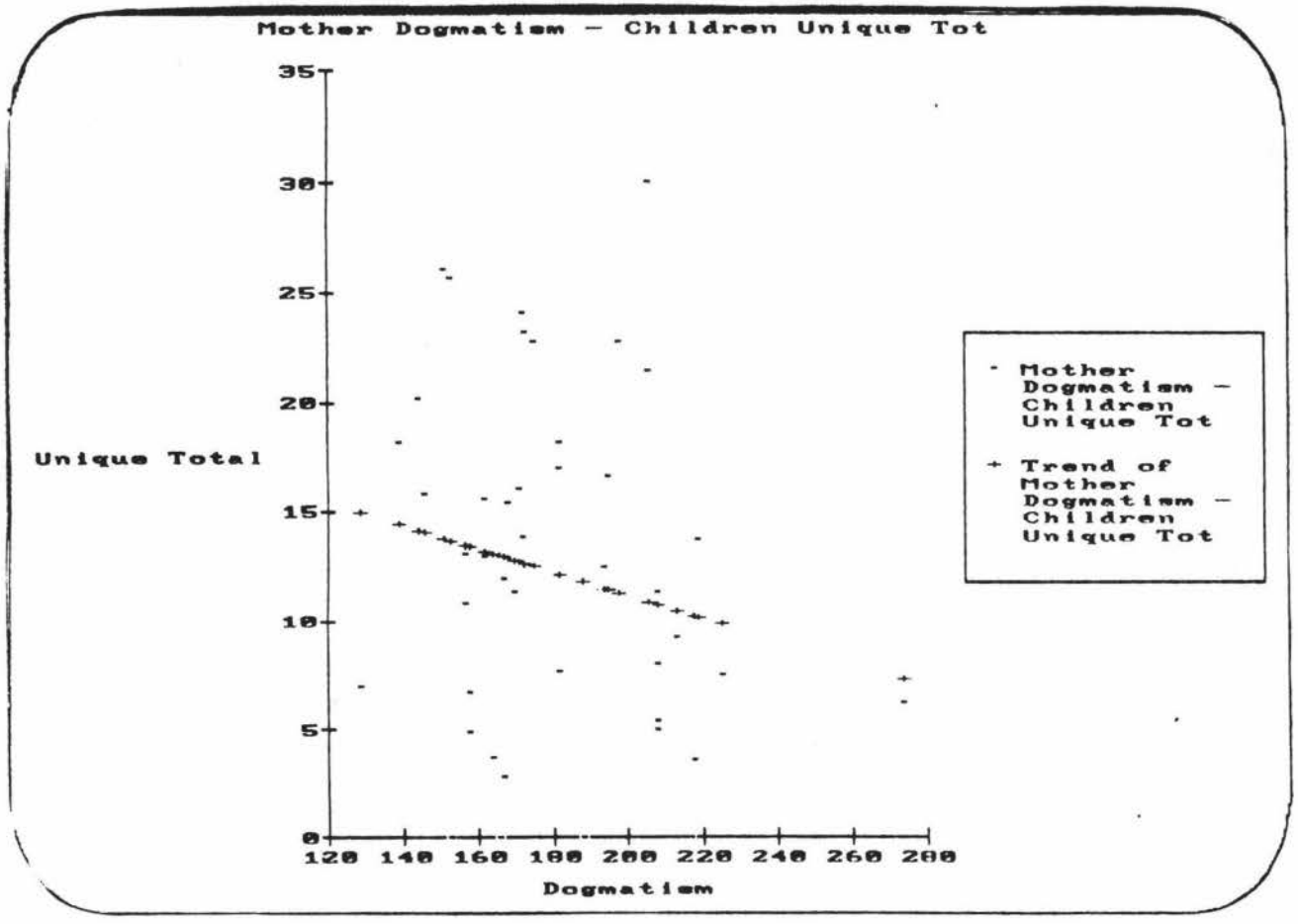
120 130 140 150 160 170 180 190 200 210 220
Dogmatism
- Mother Dogmatism – Unique Tot Sons
+ Trend of Mother Dogmatism – Unique Tot Sons

Fig 2b


Mother Dogmatism - Children Unique Tot
Unique Total
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120 140 160 180 200 220 240 260 280
Dogmatism
Mother Dogmatism - Children Unique Tot
Trend of Mother Dogmatism - Children Unique Tot

Fig 3a

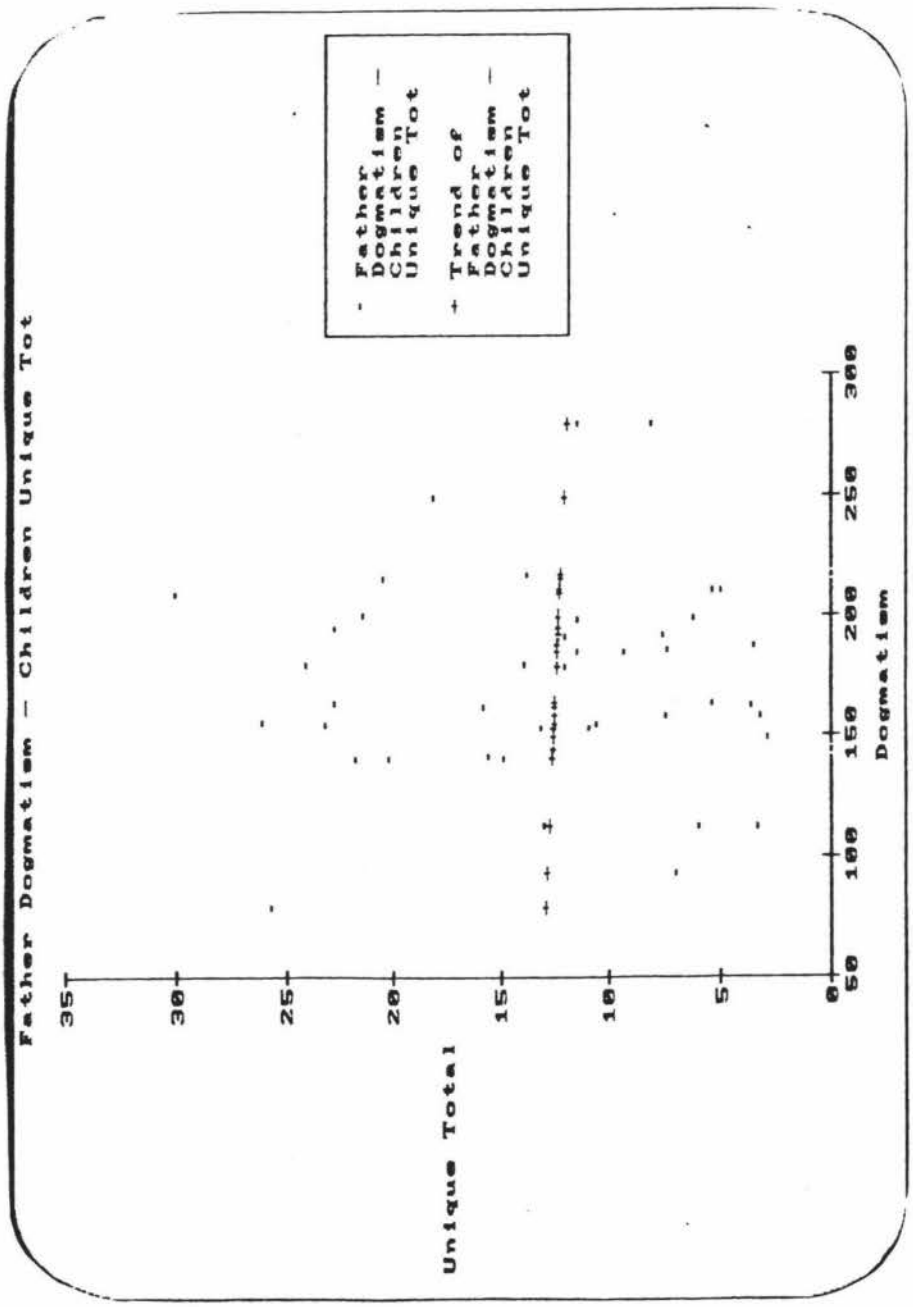
Father Dogmatism — Children Unique Tot
Father Dogmatism — Children Unique Tot
Trend of Father Dogmatism — Children Unique Tot
Unique Total
Dogmatism
0
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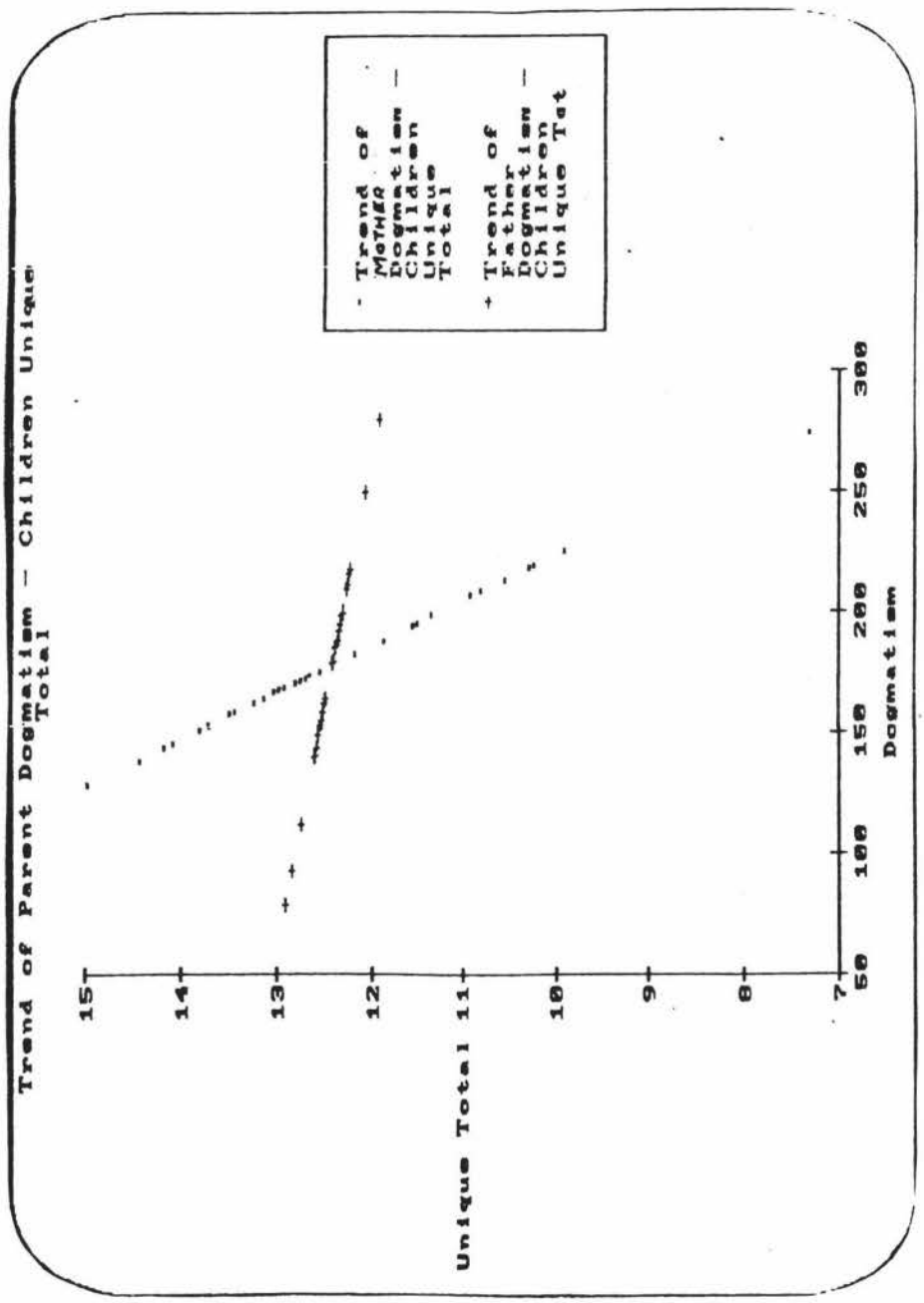
Fig 3b


Trend of Parent Dogmatism — Children Unique Total
- Trend of Mother Dogmatism — Children Unique Total
+ Trend of Father Dogmatism — Children Unique Tot
Unique Total
Dogmatism
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12
11
10
9
8
7
50
100
150
200
250
300

Fig 4

9. DISCUSSION AND IMPLICATIONS

9.1 Introduction

This chapter will firstly attempt to identify and discuss factors which may assist in interpreting the results and secondly, briefly suggest several implications of the study.

The results gained from the study indicated characteristics of the proposed authoritarian/creativity relationship which showed a consistency of direction with the literature (Marino, 1967; Nichols, 1984) and the results of a previous small scale study (Hann, 1987). While other studies (Marino, 1968; Williams, 1971; Torrance, 1973) had indicated statistically significant negative relationships between creative indices, particularly originality and measures of authoritarianism, the present investigation exposed relationships of considerably less magnitude.

It was proposed that authoritarianism in parents would be found in association with low levels of creativity attainment and, would by implication, constrain creativity in their children. This hypothesis was based on previous empirical field work and supporting literature. From an empirical point of view, it could be argued that the case rested with the acceptance of the null hypothesis of no difference between the independent variable of authoritarianism and the dependent variable, creativity. It could be suggested that authoritarianism did not constrain creativity. However, it would be inconsistent and inaccurate to conclude that authoritarianism and creativity were not related per se.

The findings of this study and the supporting literature appeared to point in two directions. Firstly, the present study only marginally supported those studies which intimated a quite straight forward inverse relationship between the two constructs and secondly, support emerged that suggested a relationship that was complex. Empirical results indicated that under some conditions, an apparently anomalous relationship existed. Simply, it was suggested that facilitation or constraint of creativity by authoritarianism was qualified by numerous factors including:

a) individual factors within the child

b) salient social environmental influences

c) other factors contingent on the specific parent/child social relationship and

d) the specific nature of the authoritarianism and creativity measures might have indicated a mismatch with a wider conception of the constructs.

9.2 Research Design Factors

Sample Size: The sample of child subjects participating in the study numbered 58. This was the result of several factors.

A. Of the families who met the criteria for inclusion in the study (parents of children (10-16yrs) within the population) 70% responded to the instrument package issued.

B. The sample size was marginally decreased (10%) by non-completion or incorrect completion of the D Scale measure.

The effect of these factors was a cell size decrease in the chi square contingency tables thus increasing the possible effects of bias or the risk of producing inconclusive invalid results within the statistical comparisons. A larger sample size may have magnified and thus clarified the direction of the relationships between the variables.

Sample Characteristics: This study addressed a population which was relatively well defined in terms of cultural mores. Attendance at Seventh-day Adventist Schools pre-supposed certain attitudes and values toward religion and consequent societal and inter-personal relationships by the parent population. There was no obvious justification in proposing this was either a positive or negative factor in the relatively low magnitude of relationships evident within the general study framework except to state that within a small sample size, factors related to the special nature of the population may have accentuated any trends. In other words, the possibility existed that the research sample was atypical of what could be expected in a more cosmopolitan population, indicating that future studies should address different widely based populations.

Hann's (1987) study which addressed a different component of the same general population (S.D.A. school children) found a wider range of dogmatism than the present study. This suggested that factors within the specific study sample were related to the nature of exhibited levels of dogmatism.

The D Scale mean score was 170, higher than Rokeach's (1960) published norms. According to the general hypothesis, it was expected that a cohort possessing high dogmatism scores would be in an inverse relationship to children with low creativity scores. Indications on one index of creativity suggested confirmation of such a relationship (Figures 2a and b.) Conversely, it was expected that creativity levels of low dogmatic parental children would be unconstrained or operationally, show higher creativity attainment.

In support, Hann (1987) noted a situation where low parent dogmatism was correlated with high levels of creative attainment (Table XIII.)

TABLE XIII

PERCENTAGE OF UNIQUE RESPONSES IN COMPARISON TO TOTAL RESPONSES

	Number in Sample	Mean Responses Creativity	S.D.(Sn-1)
Children of High Dogmatic Mothers	5	26.8	9.55
Children of Low Dogmatic Mothers	5	45.0	14.19

Null Hypothesis (Ho) : $\bar{X}a = \bar{X}b$ and Sn-1 = Sn-1
t value = 2.379
DF = 8
p = .0431

(Hann 1987, Table 5, p36)

Increasing the population numbers to perhaps include all parents of children 10-16yrs attending S.D.A. Schools within New Zealand might provide a wider focus on relationship patterns within the population. This could provide the clarity desirable in determining the effect of specific sample

characteristics on dogmatism levels in relation to creativity attainment.

Ethnic Characteristics: The literature suggested that traditional pacific island cultures inherently possessed high levels of authoritarianism (Torrance, 1973; Falealii, 1975.) Approximately 30% of the studied parent sample were classified as being Pacific Islanders. This may have been a contributing factor to the high mean dogmatism scores within the sample and suggested implications for addressing the needs of cultural minorities in New Zealand populations within the context of their specific belief structure characteristics.

Instrumentation - D Scale: An index of dogmatism in parents was central to the studies' aims. The D Scale was used with the assumption that the measure was ideologically free and consequently reliable for the expected multi-cultural and religious nature of the sample. This was in contrast to the alternative instrument, the Wilson-Patterson Conservatism Scale which was criticized as assessing authoritarianism in terms of a particular cultural belief content (Stacey, 1977a; Kerlinger, 1976; Bedggood, 1977.) The study also exposed the need to examine the language competencies necessary for the completion of a written instrument.

Those who were designated of European or Maori descent had little difficulty in completing the D Scale. In contrast, several pacific island respondents either returned the D Scale without attempting to complete the form or completed the form in such a way to make the data invalid. This indicated that the D Scale incorporated a premise of certain English language

competencies both in reading level and question comprehension. A complete potential cohort of the sample could therefore have been prejudiced against, and eliminated from, valid assessment.

A face validity test suggested that the D Scale format was compatible with polynesian subjects. However, it could only optimistically form an indication of the instrument's relevance to multi-cultural sample groups and not as an exhaustive justification for blanket usage among E.S.L. (English as a Second Language) subjects.

Creativity Measurement: Wallach and Kogan: The Wallach and Kogan (1965) creativity measure purported to assess creativity within a non-formalized test situation.

Amabile (1983) stressed a task definition concept as being central to defining the creative process. Creativity was seen as related to heuristic, open ended tasks where multiple solution pathways were available. This was contrasted with algorithmic single pathway tasks. The Wallach and Kogan instrument implicitly assumed that the responses to the measure were creative acts or indicative of creative potential. However, a creative person may, by the virtue of the intrinsic nature of the process, not respond as expected.

Issues of Causation: While the quantitative element of the present study did not address causation directly, it was implied that high levels of dogmatism in parents would constrain levels of creativity in their children.

The scattergram trend analysis illustrated several trends which raised questions of causation and the specific nature of creativity discontinuity. Daughters with highly dogmatic

parents showed less creativity than did sons. However, the converse was true for sons and father dogmatism.

In terms of causation then, the following issues were in need of clarification. Why did lower daughter creativity occur in relation to high mother dogmatism when the same did not seem likely for son's creativity and father dogmatism? Within the context of the present study, it could be suggested that mother dogmatism was a causal factor in the lower daughter creativity attainments which did not extend to father dogmatism and their son's creativity.

An assumption of a causative link between dogmatism and creativity then suggested a further question regarding parent and child and gender influence. Noted were differences in child creativity attainment according to gender in association with the variables of parent gender. Did the cause of the variance in magnitude and nature of the relationships lie with child factors or parent factors? A further concern involved isolating likely causal factors where mother dogmatism was related in greater magnitude with lower creativity than father dogmatism (Figure 4.)

A literature consensus supported the notion that authoritarianism (or aspects typically identified within the construct) were found in an inverse relationship to creativity (or indices recognised as indicating creativity.) These however, did not fully address the issue of causation. For example, to state positive or inverse relationships between variables may merely have implied that changes in variable A caused changes in variable B.

In situations where high authoritarianism was found correlated with low creativity or vice versa, it was easy to assume causation; that is, high authoritarianism caused low creativity levels. Manipulation of variables in an experimental situation should more directly address the issue of causation. This would be achieved however only within a narrow time frame and the obvious limits of a variable's definition.

Experimental studies assessing creativity are forced to assume that the creative process was being replicated in that physical situation within the given time frame of the assessment. If this assumption was incorrect, the rationale of creativity assessment must be questioned.

This study then highlighted several issues concerning instrumentation, the assessment of creativity and specifically, the complexity of the dogmatism-creativity relationship. The results, while they pointed in the direction of the research hypothesis, did not achieve significance and in some instances, were random. Possible reasons for this pointed not to inadequacies in the underlying study rationale but instead, the complexities in defining the constructs as well as the problem of assessing creativity by procedures which may have been in some instances, extrinsically motivated and algorithmic by nature. Further, while the aims of the study did not extend to addressing causation, there existed sufficient relationship evidence to suggest that there existed causation between the variables within the context of social interaction.

9.3 Analogous Parent Dogmatism

Authoritarianism operationalized as dogmatism, and its characteristics in correlation with creativity, was central to the rationale of the study. Several categories of parent dogmatism were expected and used to construct a tabular format for the purposes of assessing the dependence of dogmatism and creativity. Fathers and mothers were categorized thus:

Dogmatism

i. High Father High Mother	ii. High Father Low Mother*
iii. Low Father High Mother*[1]	iv. Low Father Low Mother

An interesting relationship of parental dogmatism was exposed within the study sample. Few mothers and fathers within the same partnership were found to have significantly different dogmatism levels. Did the partners develop a similar belief structure or was there a natural affinity toward those with similar structures at the commencement of the relationship? If the former were true, longitudinal studies further addressing the nature and extent of authoritarian characteristics and the consequent transmission of the attitudes and values could add to the available data addressing the construct's effect on creativity. The above relationship suggested the following questions.

[1] labelled `mixed.'

i) Did authoritarianism actually cause a change through its interaction with other correlated personality attributes?

ii) Were there critical time frameworks in the transmission of belief structures or personality characteristics within developmental stages of individuals and/or in the duration of social interaction?

iii) Did males or females differ in their rate of belief structure receptivity or suggestibility when in a long term close social contact situation?

9.4 Summary

The quantitative element of this study resulted in indications which supported the hypothetical framework. Dogmatism in mothers showed a tendency toward being negatively correlated with creativity levels in their daughters. Relationships emerging within the study suggested some causation between parent dogmatism and levels of child creativity attainment.

Analogous parent dogmatism levels raised questions regarding the nature of social interaction as it affected belief structure acquisition.

9.5 The Study Population: Implications

The study sample exhibited high dogmatism levels in comparison with other published norms (Rokeach 1960, p90.) In Marino's (1968) study, religiosity and authoritarianism (dogmatism) were found to be positively correlated and that in general, religious groups scored higher in authoritarianism,

although with some qualifications. Specifically, those who were classified as very devout actually exhibited lower authoritarian levels than those regarded as fringe, or nominal members.

The intrinsic nature of high commitment may have provided an indicator as to why this was the case. `Fringe' members may have lacked the intrinsic motivation but were motivated by extrinsic pressures to conform to religious practices. In other words, they maintained a legalistic perception rather than being motivated intrinsically.

The study population was predominantly Seventh-day Adventist and evidenced in general, high levels of dogmatism. Consequently, it could have been expected to exhibit a similar positive religiosity/authoritarian relationship. This provided implications for the study population particularly when the evidence suggested that authoritarian characteristics were prejudicial to human situations where tolerance and acceptance were valued (Hart & Brown, 1967; Sexton, 1983; Rokeach, 1960.) It was suggested that authoritarian subjects characteristically exhibited a general closed mindedness with specific inabilities to judge situations and people objectively. Consequently, they found difficulty in accepting the opinions of others, in being sensitive to needs of others and tolerating differences. Authoritarian belief characteristics tended toward introversion and eventual personal separation from situations, cultures or individuals that differed from the accepted `in group'.

Implicit was the notion that particularly for individuals within the sub-culture who may have had high authoritarian

belief structures, there was a possibility of lower levels of personal and group competency in social interaction.

9.6 Within the Study Subculture

The study population, belonging largely to the Seventh-Day-Adventist church, could be summarized as evangelical or extroverted in its zeitgeist. This consequently implied the need for effective interpersonal communication. Important social interaction patterns within the sub-culture could have included parent/child peer group interaction by most members within the informal structure of the social group. The formalized institutions of the structure which included the church, (specifically at the congregational level and generally as a corporate body) and the operation of ancillary organisations (eg. educational systems) provided obvious social situations where the effects of authoritarian attitudes could possibly have been experienced.

It is suggested that cultures that exhibit high authoritarian characteristics function effectively where all members have a keen and accepting perception of their role wherever it may be in the power hierarchy. The belief structure priorities of the members could be expected to be primarily directed toward the preservation of status quo attitudes and values strictly within prescribed boundaries. This situation suggested a potential dichotomy where the needs of a structural organisation conflicted with the needs of the individual.

The projected results of the structural versus individual conflict include a breakdown of communication and personal relationships. Sexton (1983) saw this as related to the personality syndrome of alienation among youth which was correlated with highly authoritarian family influences. To generalize this would be to expect evidence of alienation characteristics among members of the study population culture, especially among the youth, evidenced in part by a rejection of the social values of the status quo.

9.7 The Polynesian Cohort

The polynesian component of the study population provided a focus for the proposed higher authoritarian tendencies of polynesian cultures (Torrance, 1973; Falealii, 1975.) Children socialized in high authoritarian situations may have had difficulty in adjusting to non-traditional social situations where an internal locus of control was encouraged and deemed desirable. A cultural subgroup exhibiting high authoritarian characteristics provoked attention at all levels of decision making for the purpose of meeting their special needs.

9.8 Authoritarian Causation

The present study concluded that high authoritarian levels were likely to be related to low creativity attainment. However, it did not address the specific nature of authoritarian causation on creativity. Both longitudinal and experimental studies, in which variables are manipulated, may

be useful in determining the nature and extent of authoritarian influence.

A pertinent finding exposed an apparent difference in male and female dogmatism on the creativity of sons and daughters. Future research will be necessary to confirm these relationships and to isolate factors relevant to their particular nature of operation.

9.9 Comparative Study

A study comparing creativity attainments of Seventh-day Adventist children and state school educated children may provide valuable data for establishing authoritarian differences across populations and their respective creativity attainment levels. This would be consistent with Stacey's (1977) suggestion that New Zealand studies utilize a range of procedures within a variety of social contexts in order to establish a body of empirical data addressing social attitudes. This should make it possible to comment on the specific attitudes and values of cultural subgroups in comparison with the wider population and provide data particularly useful in specifying causal relationships between social factors and personality variables.

9.10 Constraints on Creativity

The domain of intrinsic versus extrinsic factors for the facilitation of creativity, was in need of specification. Evidence suggested (Amabile, 1983) in general that intrinsic factors facilitated, whilst extrinsic factors constrained.

However, in what particular ways and in which circumstances did these creativity factors operate most effectively? The link between creativity attainments and social environments confirmed the importance for parents, teachers and employers to actively encourage, in terms of intrinsic motivation, the social facilitation of creativity.

9.11 Conclusion

The present study sought to confirm the hypothesized relationship between authoritarianism and creativity.

> `That high authoritarianism levels in parents will be found in inverse relation to low creativity attainments in children.'

It was concluded that, consistent with the literature, a negative relationship occurred in some circumstances. However, it was noted that in numerous instances, the relationship was not of a simple linear nature. While some studies found inverse relationships between authoritarianism and creativity reaching statistical significance, there was more often a pattern of trends rather than a definitive causative framework.

This was supported by the empirical component of the present study which exposed an element of complexity. The strength of the empirical relationships was indicative rather than statistically significant, however they were in the hypothesized direction. In other words, it was suggested by this study that within some subgroups where authoritarian levels were high, it was more likely that creativity attainments would be low.

This was the case of mother authoritarianism and the creativity attainments of their children, especially daughters. The notion that creativity attainment was to an extent a function of social factors, gained implicit support from the study's findings. The nature and degree of causation between authoritarianism and socially influenced personality constructs such as creativity, suggested further research possibilities.

It was concluded that authoritarian characteristics evident within the study population suggested potential for not only constraining creativity specifically, but inhibiting personal communication generally.

APPENDIX A

OPERATIONAL DEFINITIONS

Authoritarianism

A construct which Marino (1968) saw as having the following characteristics:

a) conventionalism
b) authoritarian submission
c) authoritarian aggression
d) anti intraception
e) superstition and stereotypy
f) power and toughness
g) destructiveness and cynicism
h) projectivity
i) preoccupation with sexual `goings on'.

Dogmatism

A form of authoritarianism as operationalized by Rokeach (1960). In contrast to Adorno's et al (1950) conception of authoritarianism (right wing ideologically) the measure of dogmatism (D Scale) was designed to be ideologically free, that is, there was a focus on belief structure rather than belief content.

Creativity

Defined in operational terms under the following indices:

a) Total number of responses
b) Unique responses and
c) Percentage unique of total responses (unique/total.)

Solo Parent Family

A family situation where one parent only resided with the family and had sole responsibility for maintaining the family as a social entity.

Mothers Only

A sample subgroup where mothers only responded to the D Scale. This included solo and dual parent mothers.

Fathers Only

A sample subgroup where fathers only responded to the D Scale. This included solo or dual parent fathers.

Both Parents

A sample subgroup where both fathers and mothers responded to the D Scale.

Seventh-day Adventist (S.D.A.)

Subjects who, in their responses to the biographic information noted S.D.A. as being their religious affiliation. This included official members and also those who identified with the culture but who were not members. A similar

definition applied to other religions recorded in the biographical data.

Study Sub-culture

A. This referred to the specific cultural environment with which the study population identified. The most salient sub-cultural factor in providing the classification was identification with the Seventh-day Adventist church.

B. The study sub-culture was regarded as being an integral component of Seventh-day Adventism in New Zealand. This definition included a wide range of ethnic, geographical and socio-economic factors.

Polynesian

Those responding `Polynesian' on the biographical information sheet. This was a general categorization and did not attempt to distinguish between ethnicity, cultural attitudes and the period of time the subject had spent in a non-traditional Polynesian culture. Those responding as Maori were not included in the Polynesian category.

Father

All male subjects who responded in the study as `father' to their respective child/children within the study sample. This definition encompassed birth, adoptive and de facto fathers.

Mother

All female subjects who responded in the study as `mother' to their respective child/children within the study sample. This definition encompassed birth, adoptive and de facto mothers.

APPENDIX B

PARENT QUESTIONNAIRE

Dear Parent,

My name is Phil Hann. I teach at Longburn Adventist College and am also studying part-time at Massey University.

During the past two years, I have been involved in research and study concerning different ways in which children think. (Please note, this is separate to intelligence.) This year I am gathering data which I will use to complete a thesis. To make the study factual, it is essential to look at real life situations. That's where I need your help! I have chosen to study children aged between ten and sixteen years from the South Auckland Primary School and the Auckland Adventist High School. Mr French and Mr Weslake have kindly supported me in this study program and I will visit the schools within the near future to interview the children.

However, I need some information about you as parents. Please find enclosed two forms which I would be very grateful if you could complete and return to the school as soon as possible.

The information you and your children supply is confidential and will be used anonymously in the writing of my thesis. The original documents will be kept in my possession until the thesis is accepted and then they will be destroyed. The thesis is not for general publication but as you are involved in the research, you are welcome to read the research results and discuss the findings.

I do not wish to impose on your privacy but I do believe that such research is essential to providing effective Christian Education in a rapidly changing world. I would like to emphasize that the aim behind my research is to find ways in which ultimately, your child's potential in education and in life, can be achieved.

Thankyou for assisting me with this research.

Christian regards,

P.V. Hann B.Ed.
Massey University Education Department

PARENT INFORMATION

Both parents should each complete a separate form.

1. NAME .....
   (Surname) (Christian Name)

2. PARENTAL STATUS (Tick appropriate box)

   a) [ ] Father
      [ ] Mother

   b) [ ] Dual parent
      [ ] Solo parent

3. AGE

   [ ] Under 30 years
   [ ] 30 - 35 years
   [ ] 36 - 40 years
   [ ] Over 40 years

4. SCHOOL QUALIFICATIONS

   [ ] Primary School
   [ ] Secondary School
   [ ] Tertiary Certificate or Degree
   [ ] Post Graduate Study

5. OCCUPATION .....

   [ ] Full-time
   [ ] Part-time
   [ ] Occasionally

6. RELIGION .....

7. What is the total number of children in your family?

   .....children.

8. What are your main hobbies and interests?

[1] .....

[2] .....

[3] .....

9. NATIONALITY

[ ] Maori
[ ] Pacific Islander
[ ] N.Z. European
[ ] Other (Please state) .....

10. How long have you lived in New Zealand? .....

IMPORTANT:

PLEASE USE ONLY YOUR OWN IDEAS WHEN FILLING IN THIS FORM.

The following is a study of what the general public thinks and feels about a number of important social and personal questions. The best answer to each statement below is your personal opinion. We have tried to cover many different and opposing points of view; you may find yourself agreeing strongly with some of the statements, disagreeing just as strongly with others, and perhaps uncertain about others; whether you agree or disagree with any statement, you can be sure that many people feel the same as you do.

Mark each statement in the left margin according to how much you agree or disagree with it. Please mark every one. Write +1, +2, +3 or -1, -2, -3 depending on how you feel in each case.

+1:	I AGREE A LITTLE	-1:	I DISAGREE A LITTLE
+2:	I AGREE ON THE WHOLE	-2:	I DISAGREE ON THE WHOLE
+3:	I AGREE VERY MUCH	-3:	I DISAGREE VERY MUCH

___ 1. The United States and Russia have just about nothing in common.

___ 2. The highest form of government is a democracy and the highest form of a democracy is a government run by those who are most intelligent.

___ 3. Even though freedom of speech for all groups is a worthwhile goal, it is unfortunately necessary to restrict the freedom of certain political groups.

___ 4. It is only natural that a person would have a much better acquaintance with ideas he believes in than with ideas he opposes.

___ 5. Man on his own is a helpless and miserable creature.

___ 6. Fundamentally, the world we live in is a pretty lonesome place.

___ 7. Most people just don't give a 'damn' for others.

___ 8. I'd like it if I could find someone who would tell me how to solve my personal problems.

___ 9. It is only natural for a person to be rather fearful of the future.

___10. There is so much to be done and so little time to do it in.

___11. Once I get wound up in a heated discussion I just can't stop.

___12. In a discussion I often find it necessary to repeat myself several times to make sure I am being understood.

___13. In a heated discussion I generally become so absorbed in what I am going to say that I forget to listen to what the others are saying.

___14. It is better to be a dead hero than a live coward.

___15. While I don't like to admit this even to myself, my secret ambition is to become a great man.

___16. The main thing in life is for a person to want to do something important.

___17. If given a chance I would do something of great benefit to the world.

___18. In the history of mankind there have probably been just a handful of really great thinkers.

___19. There are a number of people I have come to hate because of the things they stand for.

___20. A man who does not believe in some great cause has not really lived.

___21. It is only when a person devotes himself to an ideal or cause that life becomes meaningful.

___22. Of all the different philosophies which exist in this world there is probably only one that is correct.

___23. A person who gets enthusiastic about too many causes is likely to be a pretty 'wishy-washy' person.

___24. To compromise with our political opponents is dangerous because it usually leads to the betrayal of our own side.

___25. When it comes to differences of opinion in religion we must be careful not to compromise with those who believe differently from the way we do.

___26. In times like these, a person must be pretty selfish if he considers primarily his own happiness.

___27. The worst crime a person could commit is to attack publicly the people who believe in the same thing he does.

___28. In times like these it is often necessary to be more on guard against ideas put out by people or groups in one's own camp then by those in the opposing camp.

___29. A group which tolerates too much differences of opinion among its own members cannot exist for long.

___30. There are two kinds of people in this world: those who are for the truth and those who are against the truth.

___31. My blood boils whenever a person stubbornly refuses to admit he's wrong.

___32. A person who thinks primarily of his own happiness is beneath contempt.

___33. Most of the ideas which get printed nowadays aren't worth the paper they are printed on.

___34. In this complicated world of ours the only way we can know what's going on is to rely on leaders or experts who can be trusted.

___35. It is often desirable to reserve judgement about what's going on until one has had a chance to hear the opinions of those one respects.

___36. In the long run the best way to live is to pick friends and associates whose tastes and beliefs are the same as one's own,

___37. The present is all too often full of unhappiness. It is only the future that counts.

___38. If a man is to accomplish his mission in life it is sometimes necessary to gamble 'all or nothing at all.'

___39. Unfortunately, a good many people with whom I have discussed important social and moral problems don't really understand what's going on.

___40. Most people just don't know what's good for them.

APPENDIX C

CHILD CREATIVITY ASSESSMENT INSTRUMENT

TOTAL -

UNIQUE -

% -

NAME.....

AGE.....Years.....Months

This is an imaginary (pretend) thinking game.

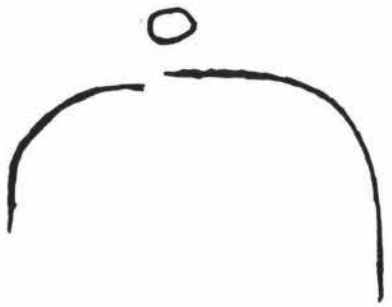
1. Write down all the things you can think of that move on wheels.

2. Write down all the different ways you could use a knife.

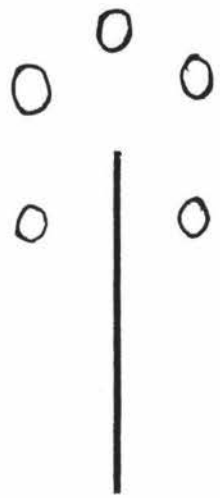
3/ Write down all the different ways you could use a chair.

4/ Write down all the ways in which a cat and a mouse are <u>alike.</u>

5/ Write down all the things this shape makes you think of:

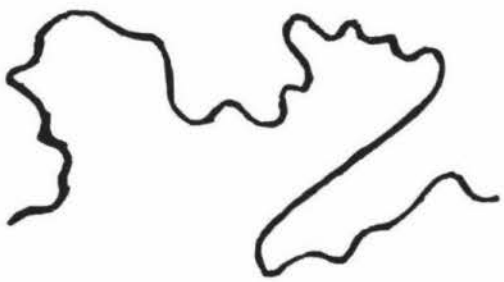


6/ Write down all the things this shape makes you think of:



7/ Write down all the things this shape makes you think of:

8/ Write down all the things this shape makes you think of:



APPENDIX D

RAW DATA

Child No.	Sex	Total Score	Unique Score	Unique/ Total Score	Polynesian	Mother D Score	Father D Score
1	F	65	5	7.69	No	182	-
2	F	53	9	16.98	No	182	-
3	F	64	8	12.5	No	194	-
4	F	26	0	0	No	188	-
5	F	34	0	0	No	188	-
6	F	44	8	18.18	Yes	182	-
7	F	45	3	6.67	No	158	-
8	F	41	2	4.88	No	158	-
9	F	66	12	18.18	No	139	-
10	F	56	9	16.07	No	171	-
11	F	36	1	2.78	Yes	167	-
12	M	35	0	0	No	166	-
13	F	52	8	15.38	No	168	-
14	M	43	3	6.98	No	129	93
15	M	50	0	0	Yes	153	144
16	F	45	7	15.56	No	162	141
17	M	46	12	26.09	Yes	151	156
18	M	101	23	22.77	No	175	164
19	F	61	8	13.1	Yes	157	153
20	F	46	5	10.87	Yes	157	153
21	F	56	13	23.21	Yes	173	155
22	M	55	2	3.64	No	164	163
23	M	38	6	15.79	No	146	162
24	F	74	19	25.68	No	153	79

Continued:

Child No.	Sex	Total Score	Unique Score	Unique/ Total Score	Polynesian	Mother D Score	Father D Score
25	F	54	7	12.96	Yes	162	113
26	F	99	20	20.2	No	144	140
27	F	55	12	21.8	No	-	140
28	F	47	7	14.89	No	-	140
29	F	38	4	10.52	No	-	155
30	F	27	2	7.41	Yes	-	158
31	F	31	1	3.23	Yes	-	158
32	M	30	1	3.33	No	-	113
33	F	50	3	6.0	No	-	113
34	F	37	2	5.41	No	-	164
35	F	35	1	2.86	No	-	149
36	F	70	8	11.4	No	-	198
37	F	41	3	7.32	No	-	186
38	F	50	6	12.0	Yes	-	191
39	M	39	8	20.51	No	-	215
40	F	55	10	18.18	Yes	-	249
41	M	112	27	24.11	No	172	180
42	M	65	9	13.85	No	172	180
43	M	25	3	12.0	Yes	167	179
44	F	35	4	11.43	No	170	185
45	M	57	2	3.51	No	218	188
46	F	51	7	13.73	Yes	219	217
47	F	39	0	0	Yes	219	217
48	F	62	5	8.06	Yes	208	280
49	F	35	4	11.43	Yes	208	280

Continued:

Child No.	Sex	Total Score	Unique Score	Unique/ Total Score	Polynesian	Mother D Score	Father D Score
50	M	42	9	21.43	No	206	200
51	M	20	1	5.0	No	208	211
52	M	37	2	5.41	No	208	211
53	M	43	4	9.3	No	213	185
54	F	60	10	16.6	No	195	-
55	M	93	28	30.11	Yes	206	209
56	F	40	3	7.5	Yes	225	192
57	F	48	3	6.25	Yes	274	199
58	M	57	13	22.81	No	198	195

Parent D Scale Score: n = 88
: $\bar{x}$ = 170

Child Creativity Score: Total $\bar{x}$ = 50.18
Unique $\bar{x}$ = 6.75
Unique/Total $\bar{x}$ = 11.78

APPENDIX E

STATED OCCUPATIONS OF PARENTS IN SAMPLE

Fathers	Mothers
Machine Operator	Finisher Operator
Manager	Shop Assistant
Engineer	Housewife
Unemployed	Teacher
Minister of Religion	Storeperson
Carpenter	Teacher
Minister of Religion	Teacher
Engineer	Teacher
Administrator	Shop Assistant
Minister of Religion	Cutter
Storeman	Registered Nurse
Minister of Religion	Nurse Aid
Minister of Religion	Bank Officer
Spraypainter	Resthome worker
Teacher	Teacher
Quality Control Operator	Manager
Bakery Worker	Beneficiary
Publishing Director	Secretary
Accountant	Quality Control Operator
Manager	Self employed
Storeman	Staff Nurse
Storeman	Clerk
Salesman	Caterers Assistant
Accountant	Housewife
Salesman	Packer
Process Worker	Process Worker
Clerk	Clerk
Clerk	Orderly
Taxi Driver	Machinist
Accountant	Housewife
Machine Setter	Housewife
Electrician	Accountant
Beneficiary	Librarian
	Packer
	Housewife
	Housewife
	Teacher

APPENDIX F

RAW DATA

SCATTERGRAM TREND ANALYSES

Father Dogmatism and Daughter Unique/Total Responses Scattergram

(See Figure 1a, page 80.)

Father Dogmatism Score	Daughter Unique/Total Responses
141	15.56
153	13.10
153	10.87
155	23.21
79	25.68
113	12.96
140	20.20
140	21.80
140	14.89
155	10.52
158	7.41
158	3.23
113	6.00
164	5.41
149	2.86
198	11.40
186	7.32
191	12.00
249	18.18
185	11.43
217	13.73
217	0.00
280	8.06
280	11.43
192	7.50
199	6.25

Number of points:	26
Maximum:	25.68
Minimum:	0.00
Average:	11.57
Median:	11.43
Standard Deviation:	6.43
Correlation Coefficient:	-0.2925

Father Dogmatism and Son Total/Unique Responses Scattergram

(See Figure 1b, page 81.)

Father Dogmatism Score	Son Unique/Total Responses
93	6.98
144	0.00
156	26.09
164	22.77
163	3.64
162	15.79
113	3.33
215	20.51
180	24.11
180	13.85
179	12.00
188	3.51
200	21.43
211	5.00
211	5.41
185	9.30
209	30.11
195	22.81

Number of points:	18
Maximum:	30.11
Minimum:	0.00
Average:	13.70
Median:	13.85
Standard Deviation:	9.4527
Correlation Coefficient:	0.3423

Mother Dogmatism and Daughter Unique/Total Responses Scattergram

(See Figure 2a, page 82.)

Mother Dogmatism Score	Daughter Unique/Total Responses
182	7.69
182	16.98
194	12.50
188	0.00
188	0.00
182	18.18
158	6.67
158	4.88
139	18.18
171	16.07
167	2.78
168	15.38
162	15.56
157	13.10
157	10.87
173	23.21
153	25.68
162	12.96
144	20.20
170	11.43
219	13.73
219	0.00
208	8.06
208	11.43
195	16.60
225	7.50
274	6.25

Number of points:	27
Maximum:	25.68
Minimum:	0.00
Average:	11.69
Median:	12.50
Standard Deviation:	6.88
Correlation Coefficient:	-0.3982

Mother Dogmatism and Son Unique/Total Responses Scattergram

(See Figure 2b, page 83.)

Mother Dogmatism	Son Unique/Total Responses
166	0.00
129	6.98
153	0.00
151	26.09
175	22.77
164	3.64
146	15.79
172	24.11
172	13.85
167	12.00
218	3.51
206	21.43
208	5.00
208	5.41
213	9.30
206	30.11
198	22.18

Number of points:	17
Maximum:	30.11
Minimum:	0.00
Average:	13.0688
Median:	12
Standard Deviation:	9.7946
Correlation Coefficient:	0.06895

Mother Dogmatism and Child Unique/Total Responses Scattergram

(See Figure 3a, page 84.)

Mother Dogmatism	Child Unique/Total Responses
182	7.69
182	16.98
194	12.50
188	0.00
188	0.00
182	18.18
158	6.67
158	4.88
139	18.18
171	16.07
167	2.78
166	0.00
168	15.38
129	6.98
153	0.00
162	15.56
151	26.09
175	22.77
157	13.10
157	10.87
173	23.21
164	3.64
146	15.79
153	25.68
162	12.96
144	20.20
172	24.11
172	13.85
167	12.00
170	11.43
218	3.51
219	13.73
219	0.00
208	8.06
208	11.43
206	21.43
208	5.00
208	5.41
213	9.30
195	16.60
206	30.11
225	7.50
274	6.25
198	22.81

Number of points:	44
Maximum:	30.11
Minimum:	0.00
Average:	12.24295
Median:	12.5
Standard Deviation:	8.06785
Correlation Coefficient:	-0.1862

Father Dogmatism and Child Unique/Total Responses Scattergram

(See Figure 3b, page 85.)

Father Dogmatism	Child Unique/Total Responses
93	6.98
144	0.00
141	15.56
156	26.09
164	22.77
153	13.10
153	10.87
155	23.21
163	3.64
162	15.79
79	25.68
113	12.96
140	20.20
140	21.80
140	14.89
155	10.52
158	7.41
158	3.23
113	3.33
113	6.00
164	5.41
149	2.86
198	11.40
186	7.32
191	12.00
215	20.51
249	18.18
180	24.11
180	13.85
179	12.00
185	11.43
188	3.51
217	13.73
217	0.00
280	8.06
280	11.43
200	21.43
211	5.00
211	5.41
185	9.30
209	30.11
192	7.50
199	6.25
195	22.81

Number of points:	44
Maximum:	30.11
Minimum:	0.00
Average:	12.44
Median:	11.43
Standard Deviation:	7.78
Correlation Coefficient:	-0.0271

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