

AN INVESTIGATION INTO HOME ENVIRONMENTAL  
PROCESS AND STATUS VARIABLES OF PRIMARY  
SCHOOL CHILDREN IN CARBONEAR, NEWFOUNDLAND

CENTRE FOR NEWFOUNDLAND STUDIES

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AN INVESTIGATION INTO HOME ENVIRONMENTAL  
PROCESS AND STATUS VARIABLES OF PRIMARY  
SCHOOL CHILDREN IN CARBONEAR, NEWFOUNDLAND

A THESIS

PRESENTED TO THE

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#### ABSTRACT

The main purpose of this study was to investigate the predictive efficiency of home environmental process variables (EPVs) in comparison with the predictive ability of socio-economic status (SES). It was hypothesized that the EPVs, in total, would account for more of the total variance of the dependent cognitive measures than SES. The study differed for the most part from research in the area, in that it used early primary school children as opposed to elementary, or high school children.

Making use of two separate cognitive measures (Peabody Picture Vocabulary Test and the Concept Assessment Kit), the study was carried out in Carbonear, Newfoundland, with an original sample of 64 Grade I students. The mothers of each of the students were interviewed through questions asked from the Interview Schedule (Dave, 1963).

The central hypothesis of the study was not borne out; it was not demonstrated that EPVs accounted for a significant more amount of variance than SES. The results were discussed in light of the potential development of a model of home environment process variables.

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## INDEX TO MEASURES

SES -- Socioeconomic Status (Blishen Profession Index)

PPVT -- Peabody Picture Vocabulary Test

CAK -- Concept Assessment Kit

- Two-Dimensional Space
- Number
- Substance
- Continuous Quantity
- Weight
- Discontinuous Quantity
- Area
- Length

IS -- Dave's Interview Schedule

Achievement Press

- Parental Aspirations for Child's Education
- Parents' Own Aspirations
- Parents' Interest in Academic Achievement
- Social Press
- Standards of Reward for Educational Achievement
- Knowledge of Educational Progress of the Child
- Preparation and Planning for Educational Goals
- Total Value (Sum) of Achievement Press

Language Press

- Quality of Usage of the Parents
- Opportunities for the Enlargement and Use of Vocabulary
- Keeness of Parents for Concept Language Usage
- Total Value (Sum) for Language Process

Academic Guidance	<ul style="list-style-type: none"> <li>-- Availability of Academic Guidance</li> <li>-- Quality of Guidance</li> <li>-- Availability and Use of Materials and Facilities Related to School Learning</li> <li>-- <u>Total Value (Sum) of Press for Academic Guidance</u></li> </ul>
Activeness of Family	<ul style="list-style-type: none"> <li>-- Extent and Content of Indoor Activities</li> <li>-- Extent and Content of Outdoor Activities</li> <li>-- Use of TV and Other Media</li> <li>-- Use of Books, Periodicals and Library</li> <li>-- <u>Total Value (Sum) of Activeness of Family</u></li> </ul>
Intellectuality of Home	<ul style="list-style-type: none"> <li>-- Nature and Quality of Games, Toys, and Hobbies</li> <li>-- Opportunities for Thinking and Imagination</li> <li>-- <u>Total Value (Sum) of Intellectuality of Home</u></li> </ul>
Work Habits	<ul style="list-style-type: none"> <li>-- Degree of Structure and Routine in Family</li> <li>-- Preferences for Educational Values over Pleasurable Activities</li> <li>-- <u>Total Value (Sum) for Work Habits</u></li> </ul>

## CHAPTER I

### GENERAL PROBLEM.

#### PURPOSE OF THE STUDY

The objective of this study was to justify a casual model, linking the processes of the home environment to the subsequent cognitive development in the child. The model was derived from the Chicago School (Wolf, 1964) and incorporates the series of questions developed by Dave (1963) in his Interview Schedule (IS). Dave's model of home environmental processes brought together a series of related research concerns and attempted to operationalize them into 6 separate categories (Environmental Process Variables - EPVs) which were functionally related to a larger compilation of 31 different environmental process characteristics (EPCs).

#### STATEMENT OF THE PROBLEM

Process variables of the home and their relationship to subsequent cognitive and achievement measures of school children, are of fundamental concern to educational psychology. Formal research has substantially augmented this concern by implementing investigations into the specifics of home environments and academic potential (Dave, 1963; Wolf, 1964; Douglas, 1964; Bloom, 1964; Hammond & Cox, 1967; Campbell, 1970; Keeves, 1972; and Phua, 1976). Within the above listed research, the desired goal is of a very singular purpose: the description of those significant variables in the child's environment which ultimately lead to later learning potential.

2

The basic premise behind the "Home Environmental Press" investigations suggests that schools alone are not shapers of a child's learning potential (Bruner, 1961; Schmidt, 1973). In order to determine precisely which elements of the home environment appear to foster successful learning proficiencies, we must investigate the relationships which exist between ultimate cognitive outcomes and specific elements of the home environment.

Although characteristics associated with home environment are frequently thought of in terms of SES, the concern of this research was that characteristics of the home, apart from the gross measures such as SES, would be more successful in predicting academic proficiencies. It is from such an understanding that future remedial intervention could be put into perspective.



## CHAPTER II

### SURVEY OF RELATED LITERATURE

Past studies, e.g., Mosychuck (1969), would indicate that there are two essential groupings of Home Environmental factors: Status (SES) and Process (EPV). Status or structural variables, as they are frequently referred to, include those societal variables nominally classified as occupational status, educational level, income on paternal and/or maternal sides, and size of family. Subsequent review shall delineate those studies which have demonstrated that status variables have secondary predictive capabilities in comparison to a variety of process variables.

McCall (1973) explored the relationships between parental behaviour and patterns of IQ change. His findings demonstrated that parents of children with decreasing IQ patterns made few attempts to accelerate the child's achievement, and were either very strict or very lenient in punishing the child. By contrast, parents of children with increasing IQ patterns were "... very accelerating, substantially rewarding, clear in their policies, but medium to fairly severe in their penalties" (p. 54). These findings are particularly interesting, because IQ patterns, as described, appear independent of IQ level. Bradley (1975), using the Inventory of Home Stimulation (STIM) to predict changes in relative mental test performance of children between the ages of 6 mo. and 36 mo., found that IQ gains for infants, like these IQ gains for older children, appear related to parental attempts at accel-

eration and encouragement of intellectual development. Both sample populations, as quoted above, controlled for SES (e.g., level of income). The encouragement of intellectual development was a "process variable," operationalized within the construction of the STIM.

In a study by Fraser (1959), data on 408 Scottish 12 year olds, secondary school students, were collected concerning such variables as Family Size, Income, Living Space, Occupation, Newspaper and Magazine Reading, Parents' Education, Book Reading, Stability of the Home, Parents' Vocational Aspirations, Parental Encouragement, and General Family Atmosphere. Using IQ scores and scholastic achievement measures as dependent variables, significant correlations were obtained between .28 and .66; with "Parental Encouragement" correlating best with IQ and achievement measures.

Similar past studies (Nesbit, 1953; Himmelweit, 1957; Kirk, 1968; and Van der Eyken, 1967) have found that within the context of family size, degree of "parental care" rather than size of family is the more significant variable in predicting IQ. In a more comprehensive study, similar to Fraser's (1955), Douglas (1964) also looked at Family Size while gathering data on 5,000 English children. The aspects of the home environment which he measured included Parental Education, SES, Material Possessions, Elements of Parental Encouragement, and Educational Ambition. Significant results suggested that parental encouragement and educational ambition were the most relevant factors for the prediction of IQ, language achievement, and arithmetic achievement. However, variables such as family size and material conditions were also, to a lesser degree, significant predictors.

abilities was not clearly demonstrated. Also, Vernon found that there does appear to be a significant relationship between differing abilities and home environments.

Additional support for process variables of the home comes from Keeves' study (1972) where attitudinal characteristics of the home were found to have greater predictive qualities than status variables. Status variables, in his study, included occupation, income, and educational level. Income was found to be the least related to achievement. Level of education was found to be far more significant factor than that of occupational status.

Marjoribanks (1970) also confirmed the predictive value of process variables over status variables. Selected, were eight process variables: (1) Press for School Achievement; (2) Press for Activeness; (3) Press for Intellectuality; (4) Press for Independence; (5) Press for English; (6) Press for Ethno-Language; (7) Father's Dominance; and (8) Mother's Dominance. Compared with the above mentioned process variables were six status variables: (1) Education of the Father; (2) Education of the Mother; (3) Occupation of the Father; (4) Crowding Ratio; (5) Ordinal Position in the Family; (6) Number of Children in the Family. The children studied were sampled from Grade 6 classrooms from five Western Canadian ethnic groups. Included as dependent variables were four of Thurstone's (1938) PMA's of Reasoning, Number, Verbal, and Spatial Ability. Subsequent results demonstrated that the environmental home processes were significantly better predictors of PMA's than the status variables.

Weiss (1969) studied some relationships between process indices

Peaker (1967), reporting outcomes on a study commissioned in England, suggested that parental attitudes account for a greater amount of variance of achievement measures than either status variables or even schooling. This study was carried out with 11 and 12 year olds. Using the same data, Wiseman (1967) carried out a factor analysis and found that the home environment processes had nearly twice the weight of SES and school variables combined.

There have been several studies devoted to the affective areas of home environment. Parent-child interactions, as a reflection of home environment and as a function of discipline, were studied by Kent and Davis (1957). Subsequent findings suggested that 8 year old English children of demanding and overanxious mothers did less well on WISC-performance measures than on WISC-verbal measures. This study was further supported by Witkins' research (1974), which demonstrated that mothers who demanded strict adherence to a set of standards, tended to foster the development of verbal abilities. Further, Bayley (1968) demonstrated that home environments which both contain and promote such elements as a sense of belonging and self-reliance, are likely to have children who will perform better on IQ and achievement measures than children from homes where such reinforcement is not in force. Honzik (1967) found affective elements of mother-son and father-daughter relationships to be related to longitudinal change in IQ, which is essentially McCall's finding (1973).

Vernon (1969) found in a cross-cultural study that verbal ability is associated with home processes, such as Cultural Stimuli, Linguistic Background, and Planfulness of the Home. The relationship of SES to

of the home environment and measures of achievement motivation and self-esteem (obtained from teacher ratings, self-reports, and projective techniques). Under a separate analysis for girls and boys, 7 of 12 multiple correlations were higher than .50, while 11 of 12 exceeded .40. Results were obtained with American high school students. Previous to this study, Shaycroft (1967), also using high school students, found little direct effect between SES and the amount and/or nature of courses taken by American students in Grades 9-12.

Using a self-developed Home Environment Review (HER), Garber and Ware (1970) attempted to measure two basic areas: (1) Home characteristics which would have a direct relationship to educational processes in the school; and (2) variables directly associated with school achievement. The following process variables were included in the HER:

- (1) Expectations for Child's Schooling.
- (2) Awareness of Child's Development.
- (3) Rewards for Intellectual Development.
- (4) Press for Language Development.
- (5) Availability and Use of Supplies for Language Development.
- (6) Learning Opportunities Outside the Home.
- (7) Materials for Learning Inside the Home.
- (8) Reading Press.
- (9) Trust in School.

Regression analysis revealed that the most significant predictors of scores on the Peabody Picture Vocabulary Test (PPVT) were Expectations for the Child's School Success and Learning Materials in the Home.

Jones (1972), examining the relationship between the home

environment and measures of intelligence, tested two groups of Grade 5 Newfoundland boys (representing high and low scores on the Verbal section of the Wechsler Intelligence Scale for Children (Wechsler, 1965) and found that high verbal scores were derived from homes in which parents had higher verbal interaction than homes of lower verbal interaction. Similarly, it was found that higher verbal scores were also correlated with homes which provided more opportunities for the development of language. Further, although high verbal scores were correlated with high SES, regression analysis revealed that Opportunities for Use and Development of Language was the best predictor of verbal ability. Keeves (1972) also found attitudinal characteristics of the home to have greater predictive qualities than SES. In one recent study (Phua, 1976), where ability factors and school achievement were better predicted by SES than by home processes, the author suggests that use of early primary school children rather than Grade 5 students may have altered the results.

#### SUMMARY

The preceding review presents a theoretical perspective from which investigations into home environmental processes have developed. Successive research findings have appeared to suggest that in fact, there are factors, of a process nature, within the home environment which lead to eventual cognitive development.

The central development from this research is that static status factors are of less value in predicting cognitive and achievement measures than are the home environmental processes.



## DEFINITION OF TERMS

The main terms in this study are: the environment, the educational environment, the environmental process characteristics, the environmental process variables, Dave's Interview Schedule, status variables, and psycho-social variables. Their specific connotation, within the context of the study, is as follows:

(1) The environment is defined as the external situations and conditions that interact with an individual;

(2) The educational environment is defined as all those psycho-social situations of the environment which affect the educational achievement of the child;

(3) The environmental process variables (EPV) are the specific processes and presses of the home which interact with the child in determining his cognitive growth.

(4) The environmental process characteristics (EPC) are further defined and enumerated components of the EPV.

(5) Dave's Interview Schedule (IS) is an instrument designed to collect data about the educational environment in the home. Included in the IS are the accumulated EPV and EPC.

(6) Status variables represent the more tangible aspects of the home, primarily centred around traditional socio-economic elements such as occupation(s) of parents, amount of modern appliances, and number of children in the family.

(7) Psycho-social variables connotes all variables within the child's environment, of both a status and process nature.

## CHAPTER III

## THE RATIONALE

## THE THEORETICAL MODEL

The major assumptions underlying research into Environmental Process Variables (EPV), as predictors of subsequent or concomitant cognitive development, stem from assumptions and definitions emanating from the Chicago School (e.g., Dave, 1963; Bloom, 1964; and Wolf, 1964). As such, the psycho-social environment of the home became defined as the conditions, processes, and external stimuli which, together, directly affect the child's learning potential.

There are things in the world that are indifferent to the life activities of an organism. But they are not parts of its environment, save, potentially. The pressures of living are enacted by the environment as truly as by the organism; for they are an integration. . . . There is, of course, a natural world that exists independently of the organism, but this world is environment only as it enters directly and indirectly into life functions. (Dewey, 1938)

Dave's development of the Interview Schedule (1963) was an attempt at defining specific elements of home processes, which Bloom (1964) had stated as ". . . providing a network of forces and factors which surround, engulf, and play on the individual" (p. 33). Researchers such as Bloom (1964) posited a division of sub-environments within the total environment: In the sub-environment affecting stature, the forces were nutritional and medical; for general intelligence the major sub-environmental forces were stimulus, reinforcement, and encouragement; and for school achievement, the forces were the significant

people within the life-space of the individual along with his view of links between education and occupation (p. 170). His research had indicated that to understand the child as a functional part of the family group, understanding of the child's current experiences had to be achieved.

Dave's Interview Schedule (IS) (Table 1 is a questionnaire, sub-divided into six major categories or Presses, with the Presses, in turn, divided into further sub-categories or characteristics. The Interview Schedule includes the following Presses:

- (1) Achievement Press;
- (2) Language Press;
- (3) Academic Guidance;
- (4) Activeness of the Family;
- (5) Intellectuality of the Home; and
- (6) Work Habits in the Family.

The development of the above was drawn from a series of basic assumptions:

- (1) The total environment is composed of different, specific, environments. The educational environment is one such component of the total environment;
- (2) It is possible to isolate a specific component of the total environment for the purposes of measurement and analysis;
- (3) The child interacts with the educational environment in the home; and
- (4) The influence of the environment on the development of the child is greatest during the early formative period.

Table 1

The Environmental Process Variables and their Related  
Questions in the Interview Schedule

---

1. Achievement Press

- 1a. Parental aspirations for the education of the child -- 4,5,37,38,39,40,32
- 1b. Parents' own aspirations -- 40,41,42,43
- 1c. Parents' interest in academic achievement -- 6,7,23,24,46
- 1d. Social press for academic achievement -- 44,45
- 1e. Standards of reward for educational attainment -- 4,13,49,52
- 1f. Knowledge of the educational progress of the child -- 2,3,51,54,55
- 1g. Preparation and planning for the attainment of educational goals -- 46,47,48,50,52,53,62

2. Language Models

- 2a. Quality of the language usage of the parents -- determined by verbal response
- 2b. Opportunities for the enlargement and use of vocabulary and sentence patterns -- 7,9,25,26,27,28,29,30,34,36
- 2c. Keenness of the parents for correct and effective language usage -- 14,18,31,34,35

3. Academic Guidance

- 3a. Availability of guidance on matters relating to school work -- 21,22,52,54,55,57
- 3b. Quality of guidance on matters relating to school work -- 2,3,16,21,22,23,24
- 3c. Availability and use of materials and facilities related to school learning -- 11,17,18,19,20,22

....continued

Table 1 (continued)

---

#### 4. Activeness of the Family

- 4a. The extent and content of the indoor activities of the family -- 7,10,26,27
- 4b. The extent and content of the outdoor activities during weekends and vacations -- 6,7,8,9,27
- 4c. Use of TV and other such media -- 32,33
- 4d. Use of books, periodical literature, library and such other facilities -- 7,10,14,31

#### 5. Intellectuality in the Home

- 5a. Nature and quality of toys, games, and hobbies made available to the child -- 12,13
- 5b. Opportunities for thinking and imagination in daily activities -- 7,15,16,25

#### 6. Work Habits of the Family

- 6a. Degree of structure and routine in the home management -- 57,58,59,60
  - 6b. Preference for the educational activities over other pleasurable things -- 53,56,57,61,62,63
-

As well as the above interview schedule, an information blank was designed to obtain information about the occupation of the parents, their education, their residence and neighbourhood, and the siblings of the children under study.

#### THE RESEARCH BACKGROUND OF THE SPECIFIC ENVIRONMENTAL PROCESS VARIABLES (EPV)

##### (1) Achievement Press

Dave defines his EPV for Achievement Press as made up of the following Environmental Process Characteristics (EPC):

- a) Parental aspirations for the education of the child;
- b) Parents' own aspirations;
- c) Parents' interest in academic development;
- d) Social press for academic achievement;
- e) Standards of reward for educational attainment;
- f) Knowledge of the educational progress of the child; and
- g) Preparation and planning for the attainment of educational goals.

This particular variable was operationalized out of the work of McClelland (1953). McClelland had stated that,

... achievement motives develop in cultures, and in families where there is an emphasis on the independent development of the individual. In contrast, low achievement motivation is associated with families in which the child is more dependent on his parents, and subordinate in importance to them. (p. 328)

Murray (1938, p. 479) suggests that achievement could be defined as "... the desire or tendency to do things as rapidly and/or as well as possible," could be another definition of achievement. With respect to the family, there is a pattern established whereby the parents' expectations for their children became the expectations of their children. Rosin and D'Andraie (1959), for instance, found that parents of highly motivated sons set higher levels of aspirations with respect to their



sons than did parents of sons with low motivation. Previous to that, Kahl (1953) studied educational ambition of boys from the lower-middle class. He found that families with higher ambitions significantly had sons who, in turn, set high aspirations for their sons. This was reinforced by the findings of Katkovsky et al. (1964) that parents transfer their own achievement expectations to their children, who, in turn, develop similar expectations for achievement for their children.

The issue of independence training is a function of achievement motivation. Winterbottom (1964) found that early demands on the part of the mother for the child to perform tasks in an independent manner are associated with a high degree of achievement motivation. Kagan and Moss (1968) reported that early restrictiveness is associated with children who later exhibit less competitive behaviour with peers, and also less mastery behaviour. Watson (1957) also found that children raised in a warm permissive home were more independent and moderately persistent in the face of impossible tasks. Very clearly, then, the environment may either facilitate or retard the child's desire to seek out new experiences. Milgram (1963) even suggested that lower amounts of achievement content were contained in folk tales of societies that were more restrictive and more intent on obedience in child rearing.

In summary of the research basis for this particular EPV, it may be said that there are many factors associated with involvement from the home environment which go towards establishing a motive for achievement in the growing student.]

(2) Language Press

Dave's use of process characteristics of language within his IS, suggests an environmental press which also has a role in the child's intellectual development. Accordingly, the process characteristics of this variable have been defined by Dave as follows:

- a) Quality of language usage of the parents;
- b) Opportunities for the enlargement and use of vocabulary and sentence patterns; and
- c) Keenness of the parents for correct and effective language use.

Bruner (1960) has suggested that the symbolic stage of learning (i.e., language) is the ultimate development of the intellectual processes.

For it is the internalization of overt action that makes thought, and particularly the internalization of external dialogue that brings the powerful tool of language to bear on the stream of thought. Man is shaped by the tools and instruments he comes to use, and neither the mind nor the hand alone can amount to much. (p. 48)

Deutsch (1965), taking language as the ultimate avenue for communication and the mirror of ideational modes of problem solving, describes the culturally deprived child as having language which is used "... in a convergent or restrictive fashion, rather than an elaborative, divergent fashion" (p. 306). A reflection of his home environment in which, if the proper elements of language are not reinforced, higher thought processes are likely to suffer. Such an environment becomes self-perpetuating, as in all home processes, where the parent raises his children as he himself was raised.

John (1963) described the language variables in middle- and

lower-class homes by suggesting the same lack of reinforcement which Deutsch described. Part of the problem, she maintained, is the tutoring and help which the middle-class child receives and the culturally-deprived child does not. Referring to the facilitative cognitive effects of language, she pointed out that differences of intellectual performance, between high- and low-scorers, increase as the children get older. Hunt (1961), taking an environmentalist's approach, in explaining the differences between the middle- and lower-classes, pointed out that there is an inappropriate match between the child's intrinsic development and external stimulation in the lower-classes.

Bernstein (1960), in a language comparison study of middle- and lower-classes, found that the culturally deprived child has grammatically simple and unfinished sentences, poor syntactical form, simple and repetitive use of conjunctions, deficiencies in holding formal topics through speech sequences, limited and rigid use of adjectives and adverbs, poor word fluency, and a lack of verbal strategies, which might be used to develop and promote ways of thinking by giving direction to thinking. Further, the middle-class child displays a language style which is mediated through a grammatically complex sentence structure: frequent use of prepositions and impersonal pronouns, and a discriminative selection of adjectives and adverbs. In a concept sorting task, done during the same study, it was found that culturally deprived children would classify cards of observed categories into broader or less specific categories: they would not attend to the labels on the cards but would group the observed characteristics on cards into one or two categories, rather than four or five sub-categories. In both SES

groups the influence of environment takes place, predominantly before the child enters school. The issue is to find precise environmental determinants apart from static SES concepts.

Milner (1951) did a study contrasting six to seven year old Black children on the basis of their language ability. Included in the observed patterns of parent-child interaction was the reinforcement the children received for their language behaviour, particularly at meal times. Those children who scored high received more overt expressions of affection from significant adults than those who scored low on the language tests. Milner points out that these factors correlated with variations in SES. He further suggests that parental attitudes towards children and patterns of family life are the really significant factors, apart from SES, for language development.

With respect to familial attitudes, McCarthy (1952) suggested that language development depends to a considerable extent upon the child's identification with his mother. She maintained that it is difficult to make a child, who has been subjected to parental rejection and discipline, sufficiently secure, such that learning can progress satisfactorily.

Luria (1961) maintained that all of a child's mental activities are conditioned from the earliest stages of mental development by his social relationships with adults, which, by and large, are a function of environmental processes. Luria based his theoretical assumptions, for his research, on the work of Vygotsky (1932). Vygotsky demonstrated with his research that language is a process in which functions, previously shared between two persons for the purposes of social communication,

gradually change into those processes which form the essence of higher mental activity. Language permits the child to go beyond the bonds of physical limitations by using linguistic facilities to alter the relative strength of the stimuli acting upon him, and thus adapting his behaviour accordingly. In support of this approach, Bloom (1965), after an exhaustive investigation into the problems of environmental deprivation, wrote:

In particular, environmentally deprived children seem to have special difficulty in developing concepts of an abstract nature and in generalizing. These cognitive deficiencies become most evident in the latter elementary and junior high school grades, when the subject matter typically requires such abilities which depend on the strength of their language capabilities. (p. 72).

### (3) Academic Guidance

The EPV represented by Academic Guidance in the IS has the following process characteristics:

- a) Availability of guidance on matters relating to school work;
- b) Quality of guidance on matters relating to school work; and
- c) Availability and use of materials and facilities related to school learning.

As Dave (1963) suggested, the nature of this particular process variable involves a broader concern than the mere tutoring of a child with his home assignments:

It includes an awareness of the parents regarding the educational progress of the child; helping him in appraising his own strengths and weaknesses, providing suggestions for the nature of the work necessary for balanced educational progress, and developing in him a sense of accomplishment.

(p. 31)

While few reports exist (Koven and LeBow, 1973), in which parents have been a part of an organized study into areas of the academic life of their children, Ryback and Staats (1970) have presented a direct study of parent-child interaction in the area of remedial tutoring. Working with a group of Grade Four students, they devised some proficiency skills in reading and spelling which were taught to parents, who, in turn, taught or guided their children. Using their successful development of a series of skills, Camp and Van Doorninck (1971) worked with mothers of three males, seven years to eight years. The mothers were taught to systematically administer tokens, redeemable for favoured objects, contingent on appropriate reading and spelling responses of their children. Results, evaluated mainly via multiple baseline analysis, demonstrated significant results. Although behaviour modification of this nature may be somewhat removed from the classical perception of home guidance, it does demonstrate the significance of those processes (e.g., tutoring) of the home environment, when controlled under a reasonably consistent attempt to secure positive outcomes.

Havinghurst and Newgarten (1959), studied social class patterns and suggested that there are environmental process differences between SES levels. Conclusions from their studies suggest that middle-SES parents are more involved with their pre-school youngsters in areas of reading and arithmetic than are lower-SES parents. Essentially, Havinghurst (1953) looked upon 'Academic Guidance' as a fostering of "developmental tasks," which

... arise at or about a certain period in the life of the individual, successful achievement of which leads to his happiness and to success with later tasks, while failure



leads to unhappiness in the individual, and to disapproval by society. (p. 2)

He further suggests that it is the home environment which is the fundamental source of aid in the child's progress through these "developmental tasks."

Leubling (1967), summarizing a three-year study of high school dropouts, reported that the most frequently recorded problem presented to guidance counsellors working with dropouts was the issue of family relationships. Stability of family environmental practices is necessary for instilling in the child the goals and aspirations for educational progress; without such environmental impact, intellectual progress is stultified.

Several other investigators (Hurly, 1965; Crites and Sembler, 1967; Bayley, 1968; and Garber and Ware, 1970) have shown that a home which promotes the child's sense of worth, sense of belonging, and sense of self-reliance leads to better performance on tests of IQ and school achievement.

#### (4) Activeness of the Family

This variable has the following process characteristics:

- a) The extent and content of the indoor activities of the family;
- b) The extent and content of the outdoor activities during week-ends and vacations;
- c) Use of TV and other such media; and
- d) Use of books, periodicals, libraries, and other such activities.

Activeness of the family, although implying a form of physical activity, was intended to define a variable concerned with academic or intellectual activities at home, paralleling the child's experiences at school. Within the developing area of home-environmental processes research, Baldwin et al. (1945) were among the first group of investigators to describe "activeness" of the home as one of the significant variables of parental behaviour. Included in their study were: (1) activity level of the home; (2) quickness and alertness of topics discussed; and (3) the variety of contacts between parent and child.

Using a scale of ten EPVs on his Differential Environmental Process Variables (DEPVAR), with WISC sub-tests as dependent variables, Mosychuck (1969) found that Numerical and Reasoning abilities were linked with exposure to a variety of visual and kinesthetic stimuli, in addition to encouragement of resourcefulness and initiative. Such processes would appear to correspond to Dave's intended appreciation of 'Home Activity.'

Garber and Ware (1970) employed what was described as the 'Home Environment Review':

- (1) Expectations for Child's Schooling;
- (2) Awareness of Child's Development;
- (3) Rewards for Intellectual Development;
- (4) Press for Language Development;
- (5) Availability and Use of Supplies for Language Development;
- (6) Learning Opportunities Outside the Home;
- (7) Materials for Learning in the Home;
- (8) Reading Press; and

(9) Trust in School.

Working with Grade Five students, and making use of stepwise regression analyses, it was demonstrated that scores on the Peabody Picture Vocabulary Test (PPVT, Dunn, 1956) were most predictable from Learning Materials in the Home.

Also, with respect to Home Activity, Jones (1972), using regression analyses on a selection of Mosychuck's (1969) process variables, demonstrated opportunities for the use and development of language to be the best predictor of verbal ability. Similarly, Hill (1967) found that parent-child sharing and social interaction were related to a variety of cognitive measures. Although such descriptive categories could possibly be subsumed under a variety of process variable headings, there is no doubt that they represent a degree of home activity.

Witkins et al. (1974), having looked into a series of child-rearing practices relating to the field-dependence-independence dichotomy of psychological differentiation, dealt with three major variables: (1) Training for Independence as exhibited by mothers adoption of physical care appropriate to the child's age; (2) Training for Control of Aggression as indicated by the mother using reasoning and explanation in disciplining; and (3) Mother's Personal Characteristics, as indicated by having assurance in her own competence in raising the child (p. 237). Subsequent findings suggested that authoritarian mothers who imposed severe standards of discipline and stressed conformity appeared to negate differentiation, but did foster the development of verbal abilities.

Within the area of culture and perception, Merleau-Ponty (1964)

found that it was home exposure, prior to attending school, which allowed his sample of Ghanaian school children in Grade Three to perceive pictures as three-dimensional representations, rather than two-dimensional. Homes where there was no evidence of activities such as reading, drawing, painting, looking at pictures, pattern-making, or playing with construction toys, had children who demonstrated a significant preponderance to view pictures as two-dimensional.

#### (5) Intellectuality in the Home

This EPV has the following process characteristics:

- a) Nature and quality of toys, games, and hobbies made available to the child; and
- b) Opportunities for thinking and imagination in daily activities.

The opportunities for social stimulation must appear concomitantly with physical and neurological growth (Bruner, 1969). This area of intellectual stimulation has clearly defined imperatives for the home environment, and for the parental responsibility therein. Moore (1964) has suggested that the teaching of reading is a function of appropriate methods demonstrated within the context of formal education, but subsequently reinforced at home. It must also be assumed that the perceptual maturity and environmental opportunity are parallel forces necessary for the development of reading skills (Bannatyne, 1971).

Holt (1974) has suggested that the amount of significant learning within the school is a mere reflection of the variety of intellectual experiences of the home, and even more broadly speaking, of society as a whole. The intellectuality of the home represents both the substance

and motivation of a child's learning perspective. Escalona and Heider (1959), in a series of studies of neonates, suggested that depending on the level of acceptance in any given family environment, the growing child may restrict or expand his motor responses, ultimately determining his future level of coordination.

Bernstein (1958) has observed that the middle-SES child, as opposed to the lower-SES child, grows up in a carefully circumscribed environment in which the gamut of his intellectual life is defined. Toys, games, and hobbies, reflect the standard of encouragement available to the child.

#### (6) Work Habits in the Family

This EPV has the following process characteristics:

- a) Degree of structure and routine in the home management; and
- b) Preference for educational activities over other pleasurable things.

Dave (1963), in discussing Work Habits, suggested the basis for this EPV originates "... in the home. It is likely to be related to more general work habits in the family, and to the degree of structure in the management of the home" (p. 37). The priorities and values of the home environment are considered to be consistent with the manifested study habits of the child. McCall (1973) found that gains in mental test performance were related to the parents' use of a moderate, rationally structured approach to discipline. Baley and Schaefer (1964) found that children between the ages of one and four and one-half years old, with egalitarian and positively evaluating mothers, had higher mental

test scores than those children with mothers who were authoritarian and negatively evaluating. Similarly, Sontag et.al. (1958) observed that IQ increases during the elementary school years were associated with parental attempts to accelerate achievement and parental use of rational and democratic discipline practices. Honzik (1967) reported that when certain family variables were measured when the child was at twenty-one months of age, there was a correlation with the child's mental test scores, and the magnitude of the correlation increased as the child got older.

Krus and Rubin (1974) tested kindergarten youngsters on the Metropolitan Readiness Test (Hildreth, Griffiths, and McGarwin, 1969) and the Illinois Test of Psycholinguistic Abilities (Kirk, McCarthy, and Kirk, 1968) and in Grade Two with the Wide Range Achievement Test (Jastak, Bijou and Jastak, 1965). His results showed that family history factors were more important predictors of the above outcome variables than SES. And further the results demonstrated that school-related activities of the home were the most significant aspects of the home environment.

#### SUMMARY

A review of the previous literature suggests that Dave, (1963) has substantial reason to design his IS within the framework of the aforementioned six EPVs. The overriding concern is that the developed IS will provide a more definitive instrument from which to predict cognitive development than will SES.

It follows, therefore, that the issue has not been conclusively decided. However, several points can be gleaned from the surveyed literature: (1) That the majority of studies have been done with elemen-

tary and/or high school students; (2) that achievement, rather than IQ or specific cognitive measures, has been the dependent variable; and (3) that an efficient learning model, encompassing the EPVs of the home, is the specific goal of the related research.

#### HYPOTHESIZED RELATIONSHIP

A significant methodological problem with several of the studies (Phua, 1976; Keeves, 1972; Marjoribanks, 1970; Mosychuck, 1969; and Dave, 1963) is the use of measurement instruments with students who have been a part of the schooling process for a significant number of years. A design such as this interferes with the direct concern of predicting intellectual success from EPVs. It is more plausible to suggest that EPVs will have their most evidential effect prior to formal schooling, rather than after several years of the educational process, at which point the effects of the latter will have compensated, to some extent, for processes in the home.

Further concerns lie in the direction of selection of outcome measures. In order to follow the logical sequence of testing in the early primary grades, it would be more consistent to make use of cognitive tests other than those specifically devoted to achievement. Achievement, while no doubt reflecting home environment, essentially concerns itself with the effects of schooling. So that the focus be placed on the effects of the home, attempts at minimizing schooling are in order.

The attempt at predicting cognitive development from EPVs should reflect a behavioral model incorporating a direct concern for the contingencies of learning (Lazarfeld, 1959); the use of the IS was such an

attempt. The EPVs have been shown to reflect a behavioral model, substantially concerned with learned behavior.

Therefore the following hypotheses are suggested:

- (1) As dependent measures of cognitive growth, the CAK and the PPVT will significantly correlate with each other. Further, the subtests of the CAK, inasmuch as they represent a unitary concept, e.g., conservation, will be highly intercorrelated with each other.
- (2) The PPVT will form a higher correlation with SES than will the CAK which is suggested by the more varied receptive language structure of the PPVT.
- (3) Of the three independent variables, SEX, SES, and IS, SEX will correlate least with the dependent measures, and will account for the least amount of variance.
- (4) The EPCs within their individual EPV aggregations will correlate significantly with each other.
- (5) The EPVs, as measured by Dave's IS (1963), will account for a significant amount of the variance in the dependent variables (i.e., PPVT and CAK) in addition to that accounted for by SES.



## CHAPTER IV

### METHODOLOGY

#### SUBJECTS

The children were from three Grade One classes in the Carbonear, Newfoundland school system of the Avalon North Integrated School Board. Included in the sample were 34 boys and 30 girls. This represents the total population of eligible Protestant school children for Grade One in the town of Carbonear. Age Range was 6 yr. 0 mo. to 9 yr. 8 mo. Included in the sample were three children over the age of eight years.

#### MEASURES

Determination of SES of a particular family was made with the Blishen Socio-Economic Index (1976); this index was standardized for the Canadian population. The reported occupation of the father was cross-checked with the cumulative record.

Scores of language reception IQ were obtained through use of the PPVT (Dunn, 1965). The students were asked to respond to a given verbal stimulus, spoken by the tester, by either pointing to or telling the specific number of the corresponding picture. The other cognitive measure was the Concept Assessment Kit (CAK, Goldschmidt and Bentler, 1967), developed from the systematic cognitive theories of Piaget (1964). The function of the CAK was to test the concept of conservation, and thereby signal the child's transition from a prelogical mode to a logical mode of thought. When a child has attained conservation (i.e.

of substance, weight, volume, and number) he is capable of recognizing the stability of an object, even though the properties of the physical object may have been transformed in shape, form, colour, or position. The CAK represents a standardized measure for assessing the concept of conservation.

#### INSTRUMENTATION AND DEVELOPMENT OF THE INTERVIEW SCHEDULE (DAVE, 1963)

Use of the IS was carried out with the mother of each child. Essentially the IS is an attempt at response probing, more comprehensive in format than either self-report inventories or questionnaires (Macoby and Macoby, 1954). The interviewer is permitted a certain breadth of response, allowing details to be subjected to further questioning. Dave (1963) also suggested that "... the detailed and precise information thus obtained may also improve the reliability of the interviewer's judgement" (p. 42). Dave does suggest, however, that direct observation of the home environment is perhaps the most scientifically credible technique, albeit there are certain impracticalities to be overcome. Actual observation was used as a checking device in ascertaining the validity and dependability of those questions which were subject to concrete validation.

Each EPV is composed of separate environmental process characteristics (EPCs). And each EPC is, in turn, defined in terms of the criteria for their evaluation, through a series of questions, each question being rated by the interviewer on a nine-point scale. The rated questions are totaled and averaged for each EPC. The EPCs are then totaled and averaged for the determination of each of the EPVs.

Dave and his associates tried out the preliminary IS on five families of various SES groupings, whose children were in the elementary grades. To quote,

Four of the families were from a large city, while the fifth lived in a small town. The primary purposes of this try-out were: (a) to understand the similarities and variations in the educational environments of the homes; (b) to see how parents respond to the different questions of the schedule; (c) to investigate the kinds of probes necessary to elicit more precise responses in connection with certain characteristics of the environment; and (d) to discover the additional areas, if any, which should be covered in the interview in order to make it as comprehensive as possible. (p. 45)

Accordingly, Dave found a notable variance in the educational environment of the homes of similar SES. This preliminary data suggested additional questions and further elements needed in probing for answers. Attempts at revision were carried out on two more families from a suburban school district. Containing seventy-four questions, the interviews initially took between 105 and 115 minutes, and after elimination of certain questions that were considered to be replication, the time was down to 75 minutes. In all, the final IS contained 63 questions. Many of the questions have sub-questions for the purpose of eliciting precise and comprehensive responses.

#### RATING SCALES

The rating scales for each question are nine-point measures. A nine-point scale was employed as it minimizes the tendency of raters using smaller scales to regress their judgments towards the middle of the scale.

#### INITIAL SAMPLING PROCEDURE

In developing the IS, Dave (1963) attempted to control for a mutual school curriculum, and as well to select a school which represented the gamut of home environments, e.g., urban, suburban, and rural, as well as a diversified occupational distribution. Rather than sample from one large school, a stratified random sample from a school board of some 14,000 pupils was selected.

#### SELECTION OF GRADE

Using a sample of elementary school children from Grade Five, it was assumed that at least fifty percent of a child's hypothesized achievement pattern will have developed to a point of stability and reliability (Dave, 1963).

#### REDUCTION OF INITIAL SAMPLE

Using 24 elementary schools and a population of 1,062 students, ratings were first gathered on the father's occupation using Warner's revised scale (1960). From four parallel pools of this sample, 60 students were selected. Of the 60 children in the final sample, there were 28 boys and 32 girls. Age range was from 10.5 yrs. to 12.0 yrs.

#### COLLECTION OF DATA

The data required in Dave's study included use of the IS, listing of the SES (Warner, 1960), education achievement scores, and their IQs. Achievement testing was carried out with the Metropolitan Achievement Battery (Durost, 1959), which was administered at the end of the fourth grade, before visiting the homes, and again towards the

end of the fifth grade. Results were reported for 48 cases out of 60. IQs were obtained from the Henman-Nelson Tests of Mental Ability (Lamke and Nelson, 1957).

#### ADMINISTRATION OF THE CARBONEAR STUDY

The PPVT and the CAK were administered by an assistant, prior to the interviewing of the mother. The testing was done from April 3, 1977 to April 24, 1977. All 64 students participated in the testing. The PPVT was administered to each student in 15-20 minutes. The CAK was more involved, and actual testing per student required 40-60 minutes. The IS administration was done during the months of July and August of 1977. Each interview took between 1-1½ hours, and 58 of the original sample of students were covered by the interviewing.

## CHAPTER V

## RESULTS

## PRESENTATION OF RESULTS

This chapter presents the results of analyses carried out on the various measures implemented in this study. Correlations were calculated among the aforementioned variables. The major component in the analyses included a step-wise multiple regression analysis. The purpose of such analyses was to separate the effects of the independent variables (i.e., SES and IS) on the dependent measures (i.e., CAK and PPVT). The procedure involved entering the SES variable in the first step, i.e., the variance in the dependent measures due to SES was removed before the variance due to the IS was considered. This yielded a lower level estimate of the effect attributable to the IS, since the first step removed not only the effect of SES but, as well, the co-variation of SES with the IS.

The summary of the regression analyses reported in Tables 11-14 indicates the degree to which variation in each of these independent variables (i.e., SES, IS) is associated with variation in the dependent measures (i.e., CAK, PPVT). The B coefficients are partial-regression coefficients, and may be considered as a measure of the influence of each independent variable on the dependent variables. For example, the partial regression coefficient for the SES-PPVT relationship (Table 11) is 0.1795 units; for each increase in SES there is an associated increase of 0.1795 units in the PPVT, when the effect of the other explanatory

variable (i.e., Press for Achievement) is controlled statistically. However, since not all the independent variables are measured in the same metric, it is difficult to determine the relative importance of each variable on the basis of the B coefficient. The standardized Beta coefficient yields this kind of information. The accuracy of the prediction equation is reflected by  $R^2$ , the proportion of variance explained.

## RESULTS

The first hypothesis, which suggested that there would be a high correlation amongst items of the CAK, was confirmed (Table 2). These items included sub-tests of two-dimensional space, number, substance, continuous quantity, weight, discontinuous quantity, area and length.

The second hypothesis suggested that the PPVT would form a higher correlation with SES than would the CAK with SES. This was not confirmed, although there was a significantly high correlation between the CAK and the PPVT (Table 3).

With respect to the third hypothesis, it was confirmed that there were no significant correlations between SEX and the dependent measures (e.g., the PPVT and the CAK, Table 3). Further, of the three independent variables, SEX, SES, and the IS, contributing to variance explained, SEX contributed the least (Tables 12 and 14).

The fourth hypothesis suggested that the individual EPCs within their individual aggregated EPVs would correlate to a significant degree. All such correlations were significant (Tables 4-9). Further, the alpha reliability coefficients (Cronbach, 1951) for all EPCs within their aggregated EPVs were all above .90 (Tables 4-9).

Table 2. Concept Acquisition Kit -- Intra Product Moment Coefficients  
Matrix and Alpha Reliability Coefficients

	T-D Space	Number	Substance	Continuous Quantity	Weight	Discontinuous Quantity	Area	Length
T-D Space								
Number	.61							
Substance	.37	.41						
Continuous Quantity	.44	.54	.55					
Weight	.44	.42	.57	.45				
Discontinuous Quantity	.46	.44	.57	.69	.46			
Area	.38	.29	.47	.42	.46	.55		
Length	.51	.56	.51	.64	.42	.59	.48	

\* All corr. sig. ( $p < .001$ )

$\alpha = .964$



Table 3. Product-Moment Correlations -- Inclusive of All Major Variables

	AGE	SEX	SES	PPVT	CAK	Press for Achievement	Press for Language	Press for Academic Guidance	Press for Family Activity	Press for Intellec- tual quality of the Home	Press for Work Habits in the Home
AGE											
SEX											
SES	-.16	.03									
PPVT	-.13	-.03	.30*								
CAK	-.15	.03	.39**	.32**							
Press for Achievement	-.23	.13	.31*	.33**	.28*						
Press for Language	-.18	.13	.30*	.38**	.28**	.70**					
Press for Academic Guidance	-.06	.15	.26	.32**	.32*	.74**	.76**				
Press for Family Activity	-.19	.15	.48**	.45**	.36**	.70**	.82**	.73**			
Press for Intellec- tual quality of the Home	-.11	.06	.37**	.38**	.34**	.70**	.75**	.73**	.85**		
Press for Work Habits in the Home	-.27	-.01	.25	.41**	.15	.65**	.70**	.73**	.71**	.60**	

\* Corr. sig. ( $p < .01$ )

\*\* Corr. sig. ( $p < .001$ )

Table 4. Matrix of Product Moment Correlation Dave's Interview  
Schedule Press for Achievement\*

	Parental Education Aspirations	Parents' Own Aspirations	Parents' Interest in Academic Achievement	Social Press	Standards of Reward for Educational Achievement	Knowledge of Educational Progress of the Child	Preparation and Planning for Educational Goals	Total Value (Sum) of Achievement Press
Parental Education Aspirations								
Parents' Own Aspirations	.78							
Parents' Interest in Academic Achievement	.53	.39						
Social Press	.56	.38	.54					
Standards of Reward for Educational Achievement	.62	.50	.73	.56				
Knowledge of Educational Progress of the Child	.47	.48	.56	.37	.53			
Preparation and Planning for Educational Goals	.59	.56	.68	.61	.73	.67		
Total Value (Sum) of Achievement Press	.81	.76	.74	.74	.80	.70	.86	

\* All corr. sig. ( $p < .01$ )

$\alpha = .983$

Table 5. Matrix of Product Moment Correlation  
Dave's Interview Schedule  
Language Press\*

	Quality of Usage of the Parents	Opportunities for the Endorsement and Use of Vocabulary	Keeness of Parents for Concept Language Usage	Total Value (Sum) for Language Process
Quality of Usage of the Parents				
Opportunities for the Endorsement and Use of Vocabulary	.67			
Keeness of Parents for Concept Language Usage	.52	.61		
Total Value (Sum) for Language Process	.84	.81	.82	

\* All corr. sig. ( $p < .01$ )

$\alpha = .936$

Table 6. Matrix of Product Moment Correlations  
Dave's Interview Schedule  
Press for Academic Guidance\*

	Availability of Academic Guidance	Quality of Guidance	Availability and Use of Materials and Facilities Related to School Learning	Total Value (Sum) of Press for Academic Guidance
Availability of Academic Guidance				
Quality of Guidance	.75			
Availability and Use of Materials and Facilities Related to School Learning	.68	.62		
Total Value (Sum) of Press for Academic Guidance	.89	.87	.86	

\* All corr. sig. ( $p < .01$ )

$\alpha = .957$

Table 7. Matrix for Product Moment Correlation  
 Dave's Interview Schedule  
 Press for Family Activeness\*

	Extent and Content of Indoor Activities	Extent and Content of Outdoor Activities	Use of TV and Other Media	Use of Books, Periodicals and Library	Total Value (Sum) of Activeness of Family
Extent and Content of Indoor Activities					
Extent and Content of Outdoor Activities	.77				
Use of TV and Other Media	.54	.57			
Use of Books, Periodicals and Library	.70	.51	.43		
Total Value (Sum) of Activeness of Family	.91	.86	.77	.79	

\* All corr. sig. ( $p < .01$ )

$\alpha = .956$

Table 8. Matrix for Product Moment Correlation  
 Dave's Interview Schedule  
 Press for Intellectuality of the Home\*

	Nature and Quality of Games, Toys and Hobbies	Opportunities for Thinking and Imagination	Total Value (Sum) of Intellectuality of Home
Nature and Quality of Games, Toys and Hobbies			
Opportunities for Thinking and Imagination	.63		
Total Value (Sum) of Intellectuality of Home	.89	.89	

\* All corr. sig. ( $p < .01$ )

$\alpha = .926$

Table 9. Matrix of Product Moment Correlation  
 Dave's Interview Schedule  
 Press for Work Habits in the Home\*

	Degree of Structure and Routine in Family	Preferences for Educational Values over Pleasurable Activities	Total Value (Sum) for Work Habits
Degree of Structure and Routine in Family			
Preferences for Educational Values over Pleasurable Activities	.42		
Total Value (Sum) for Work Habits	.93	.93	

\* All corr. sig. ( $p < .01$ )

$\alpha = .948$

With respect to the fifth hypothesis, it was shown that the individual EPVs did add significantly to the explained variance of the PPVT (Table 11). However, it was established that the EPVs are all significantly correlated (Table 10), and their alpha ( $\alpha$ ) reliability was .974. It would therefore appear that, in fact, the 'variance explained' is the same variance explained for each EPV. This is demonstrated when the total IS is entered in regression with SES on the PPVT (Table 12). While individual EPVs add up to 15 percent each in 'explained variance,' the cumulative percentage of the total IS is 28%, which was not significant. Where the PPVT is concerned, the EPVs, individually or in total, explain the same percentage of variance.

Similar regression analysis of the CAK demonstrated that either individually (Table 13) or when the EPVs are entered in the same regression equation (Table 14), the EPVs did not contribute significantly to the 'variance explained.' Further, the demonstrated significant correlation of the CAK with SES (Table 3) suggests that the IS, either when individual EPVs are entered in regression with SES or when all the EPVs (IS) are in the same regression equation, has little variance left to explain. Therefore the fifth and major hypothesis of the study, suggesting that the environmental process variables (EPVs) could add significantly to 'variance explained,' was not confirmed.

#### DISCUSSION

In consideration of the results, the research corroborated specific elements of previously determined research but failed to sustain the central hypothesis of the IS and its EPVs as contributing a



Table 10. Matrix of Product Moment Correlation  
Dave's Interview Schedule  
Between Environmental Process Variables

	Total Value (Sum) of Achievement Press	Total Value (Sum) of Language Press	Total Value (Sum) of Press for Academic Guidance	Total Value (Sum) of Activeness of Family	Total Value (Sum) of Intellectuality of Home	Total Value (Sum) for Work Habits
Total Value (Sum) of Achievement Press						
Total Value (Sum) of Language Press	.71					
Total Value (Sum) of Press for Academic Guidance	.74	.76				
Total Value (Sum) of Activeness of Family	.70	.82	.73			
Total Value (Sum) of Intellectuality of Home	.70	.74	.70	.85		
Total Value (Sum) for Work Habits	.65	.69	.73	.71	.60	

\* All corr. sig. ( $p < .01$ )

$\alpha = .974$

Table 11. Regression of the Peabody Picture Vocabulary Test on Socio-Economic Status and Individual Environmental Process Variables

	B	Beta	R <sup>2</sup> Change	R <sup>2</sup>	F	Significance Level
SES	0.1795	0.2310	0.1102	0.1102	3.107	N.S.
Press for Achievement	0.6121	0.3275	0.0970	0.2073	6.245	p < .01
[Constant]	71.1203					
SES	0.1775	0.2283	0.110	.110	3.132	N.S.
Press for Language	0.1438	0.3528	0.114	.223	7.473	p < .01
[Constant]	71.2717					
SES	0.1918	0.2468	0.1102	.1102	3.681	N.S.
Press for Academic Guidance	1.3452	0.3303	0.1018	.2120	6.590	p < .05
[Constant]	71.6484					
SES	0.9409	0.1210	0.1102	0.1102	0.780	N.S.
Press for Family Activity	1.2163	0.4414	0.1504	0.2606	10.375	p < .01
[Constant]	73.5501					
SES	0.1560	0.2008	.1102	.1102	2.299	N.S.
Press for Intellectuality of the Home	1.6263	0.3610	.1318	.2420	7.428	p < .01
[Constant]	77.6996					
SES	0.1848	0.2379	0.1102	0.1102	3.569	N.S.
Press for Work Habits	1.9390	0.	0.1317	0.2420	8.867	p < .01
[Constant]	73.7352					

Table 12. Regression of the Peabody Picture Vocabulary Test on Socio-Economic Status, Sex, and Total Environmental Process Variables

	B	Beta	R <sup>2</sup> Change		F	Significance Level
SES	0.1130	0.1455	0.1102	0.1102	0.965	N.S.
SEX	1.8929	0.0807	0.0102	0.1204	0.365	N.S.
Press for Achievement	0.6907	0.0370	0.0908	0.2112	0.032	N.S.
Press for Language	-0.5612	-0.0138	0.0286	0.2398	0.003	N.S.
Press for Academic Guidance	-0.1948	-0.0478	0.0034	0.2433	0.041	N.S.
Press for Family Activity	0.6166	0.2238	0.0252	0.2685	0.455	N.S.
Press for Intellectuality of the Home	0.3399	0.0688	0.0002	0.2686	0.072	N.S.
Press for Work Habits	1.1349	0.2195	0.0165	0.2850	1.036	N.S.
[Constant]	69.8553					

Table 13. Regression of the Concept and Acquisition Kit on Socio-Economic Status and the Individual Environmental Process Variables

	B	Beta	R <sup>2</sup> Change	R <sup>2</sup>	F	Significance Level
SES	0.1793	0.3473	0.1586	0.1586	6.817	p < .01
Press for Achievement	0.2050	0.1651	0.0246	0.1833	1.542	N.S.
[Constant]	-1.3036					
SES	0.1791	0.3470	0.1586	0.1586	6.899	p < .01
Press for Language	0.4720	0.1743	0.0278	0.1863	1.740	N.S.
[Constant]	-1.1167					
SES	0.1761	0.3411	0.1586	0.1586	6.964	p < .01
Press for Academic Guidance	0.5990	0.2213	0.0457	0.2044	2.932	N.S.
[Constant]	-3.2957					
SES	0.1513	0.2932	0.1586	0.1586	4.209	p < .05
Press for Family Activity	0.4023	0.2197	0.0372	0.1959	2.364	N.S.
[Constant]	-0.4125					
SES	0.1700	0.3294	0.1586	0.1586	5.927	p < .01
Press for Intellectuality	0.5674	0.1896	0.0312	0.1898	1.964	N.S.
of the Home	0.7125					
[Constant]						
SES	0.1980	0.3837	0.1586	0.1586	8.392	p < .01
Press for Work Habits	0.1997	0.0581	0.0031	0.1618	0.193	N.S.
[Constant]	3.654					

Table 14. Regression of the Concept Acquisition Kit on Socio-Economic Status, Sex, and the Total Environmental Process Variables

	B	Beta	R <sup>2</sup> Change	R <sup>2</sup>	F	Significance Level
SES	0.1527	0.2956	0.1586	0.1586	3.75	p < .01
SEX	0.7037	0.0451	0.0130	0.1717	0.11	N.S.
Press for Achievement	0.2848	0.0229	0.0207	0.1924	0.01	N.S.
Press for Language	-0.4401	-0.0163	0.0058	0.1982	0.00	N.S.
Press for Academic Guidance	0.7624	0.2817	0.0138	0.2119	1.339	N.S.
Press for Family Activity	0.3642	0.1990	0.0034	0.2153	0.338	N.S.
Press for Intellectuality of the Home	-0.1636	-0.0055	0.0006	0.2159	0.000	N.S.
Press for Work Habits	-0.9300	-0.2707	0.0250	0.2409	1.485	N.S.
[Constant]	-3.1029					

significant amount to the explained variance of the dependent measures. Such an outcome received substantive support from a variety of recent research (Jencks, 1972; Phua, 1976; and Williams, 1977). Although the operationalized EPVs of the "environmental process" school represent a viable intention, their development has yet to be realized in terms of measurement (Williams, 1977). The use of SES in explaining academic outcome remains a highly significant factor.

Specifically, the major thrust of this study was to investigate the development of home environmental process variables (EPVs) as contributors to the explained variance of cognitive development (CAK and PPVT). At issue was the degree to which Dave's IS could account for the cognitive outcomes of 64 Grade I children. Dave had made use of six broad process categories in his IS which were referred to as individual presses or EPVs. These environmental process variables (EPVs) were a compilation of parental practice putatively correlated with abilities/achievements of children and referred to as environmental process characteristics EPCs. These EPCs were, in turn, aggregated from a series of questions, so designed to fit into the theoretical structure of the proposed model. As Dave (1963, p. 4) suggested:

. . . insofar as the home environment is concerned the traditional practice is to measure general sociological characteristics, e.g., SES, Family Size, etc. . . . However such ascriptive characteristics have not proved to be very effective.

His subsequent theoretical model, of process, was an attempt at a more "dynamic" approach to measure the sociological variables of the home as opposed to the traditional and static, above listed variables.

The environmental process characteristics/variables presume a

greater capacity to understand the cognitive behavior of the child; on the surface, at least, the defined processes would appear to touch on more of the basic elements of the home environment. The implications from recent research (Phua, 1976) were to the effect that the EPV model was not effective in its ability to predict cognitive achievement outcomes of children. Phua had suggested that her non-significant results might have been confounded by the use of elementary school children, as opposed to children who might be removed from the compensatory effects of schooling. The design of this study was carried out with the intention of reducing the effects of schooling, by working with Grade One children. Further attempts at reducing the implications of schooling included the use of the CAK and PPVT, both basic cognitive measures, rather than the use of achievement tests.

As reported in Table 3, the alpha ( $\alpha$ ) reliabilities (Cronbach, 1951) demonstrated high internal consistency within the EPVs. Further, there were significant correlations between the EPVs and the cognitive measures, i.e., CAK and PPVT. Such results were in keeping with Dave's findings (1963) and later attempts with similar environmental process models (Dyer, 1967; Mosychuck, 1969; Marjoribanks, 1970; and Keeves, 1972). As Jensen (1968) and Williams (1977) point out, the demonstrated correlative statistics from the environmental process studies have not demonstrated sufficient logical inference for 'cause.' Studies such as Krus and Rubins (1974) have found that approximately fifty percent of the variance in a child's early school achievement can be 'accounted for' or 'predicted from,' the mother's grade level of reading; a percentage far exceeding any demonstrable results of this study

(Tables 11-14).

Other findings suggest that the sub-tests of the CAK had very high alpha ( $\alpha$ ) reliabilities (Table 2) and therefore high internal consistency within the CAK itself (Cronbach, 1951). Such high internal consistency was previously found by Haney (1971); Hobbs (1975); and Wright et al. (1976). Other findings concerning the CAK found it to be significantly more of a correlate of SES than parallel correlations for PPVT and SES (Table 3). This finding was contrary to Haney's (1971) which found verbal ability per se, better predicted from SES than the CAK. If, in fact, the CAK does contain a greater bias towards SES than that of the IQ verbal measures of the PPVT, then this possibly reflects some original concerns by researchers in the area of language development and SES (Bernstein, 1960), such that middle SES children reflect a higher level of abstract use of language than lower SES children. This plausible explanation is suggested by the more precise and defined use of terms (more, less, or equal) in the CAK as compared to the PPVT which is not concerned with specific conceptual theory. The lack of a significant relationship for SEX and CAK is supported by the work of Piaget (1961) and subsequent research (Haney, 1971).

An interesting psychometric finding was the low, but significant, correlation between the CAK and the PPVT (Table 3). This finding may be the result of the small sample size. However, Jourdain and Jourdain (1975) found that MA scores yield higher and more consistent correlations with Piagetian tests than either CA or IQ scores, and IQ scores were the parameters used in the present study. MA is apparently less affected by age range or mean age of the subjects sampled. Both Skanes



(1976) and Dasen (1974) suggest that a major consistent finding in predicting conservation (CAK) is schooling/achievement.

#### IMPLICATIONS FOR FUTURE RESEARCH

Williams (1977) points out that there is little evidence for construct validity within the operationalized definitions of the EPCs and EPVs; similarly in the Carbonear study, it is demonstrated that the EPVs are reliable measures of uncertain validity. Williams (1977) conducted factor analyses with Majoribanks EPC data (1970), and found a first factor cutting across all EPCs and explaining close to forty-five percent of the total variance. Campbell and Fiske (1959, p. 81) concluded that "... tests can be invalidated by too high correlations with other tests from which they are intended to differ."

Williams (1977) suggests another approach which involves a social learning model (Bijou, 1971) making use of an interview schedule constructed with EPCs and EPVs defined in terms of stimulus, reinforcement and expectation. Such dimensions were nominally derived from a factor analysis which Williams (1977) carried out on a selection of data from environmental process research (Mosychuck, 1969; and Keeves, 1972). Such an approach would appear to hold some promise in the research of environmental process variables.

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