

ACADEMIC ACHIEVEMENT AND SELF-CONCEPT
OF MILITARY ADOLESCENTS ATTENDING CANADIAN
DEPARTMENT OF NATIONAL DEFENCE SCHOOLS

by

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ABSTRACT

This study investigated the relationship between scholastic performance and self-concept of grade ten military dependants, and three selected variables in the military environment.

The sample consisted of 119 tenth-grade students from seven Canadian military bases: six in Canada and one Defence base in Germany. Criterion variables were reading comprehension mathematics achievement, written expression and self-concept. Predictor variables were geographic mobility, father absence due to assignment, and military status. The sample was stratified by gender for data analysis.

The performance of the research sample on the criterion variables was compared with the published norms through construction of confidence intervals. Relationships between criterion and predictor variables were examined through partial correlations after controlling for the influence of cognitive ability. Multiple regression analyses were used to examine the relationship between the predictor variables and each criterion variable for each gender group. Bonferroni adjustment was used to guard against experiment-wise error.

The research sample was found to be similar to the norming samples of instruments used for data collection, except for mathematics and cognitive ability. There was no support for significant relationships between the environmental variables and the criterion variables. None of the bivariate correlations between the environmental and the criterion variables was statistically significant after Bonferroni adjustment for the control of Type 1 error. As well, none of the multiple regression analyses was statistically significant at the .0125 alpha level.

However, the military environmental factors investigated in this study did not appear to be detrimental to the adolescents' school achievement and self-concept. It is speculated that cognitive ability may be a mediating variable in the relationship of military environmental variables and performance in school subjects.

TABLE OF CONTENTS

ABSTRACT	ii
List of Tables	vii
Dedication	viii
Acknowledgements	ix
Overview of the Study	xi
1. INTRODUCTION	1
1.1 The Problem	4
1.2 Purpose of the Study	4
1.3 Research Questions	6
1.4 Rationale	7
1.5 Definitions	11
1.6 Need for the Study	13
1.7 Summary	14
2. REVIEW OF RELEVANT LITERATURE	15
2.1 Geographic Mobility	15
2.1.1 Geographic Mobility and Achievement	18
2.1.2 Geographic Mobility and Self-Concept	20
2.2 Father Absence Due to Assignment	21
2.2.1 Father Absence and Achievement	23
2.2.2 Father Absence and Self-Concept	24
2.3 Military Status of Father	26
2.3.1 Military Status and Achievement	26
2.3.2 Military Status and Self-Concept	27
2.4 The Military Subculture	28
2.5 Summary	37

3. METHODOLOGY	38
3.1 Research Sample	38
3.2 Instruments	38
3.3 Description of Assessment Instruments	39
3.3.1 Canadian Cognitive Abilities Test	39
3.3.2 Canadian Tests of Basic Skills	40
3.3.3 The Way I Feel About Myself	41
3.4 Predictor Variables	42
3.4.1 Geographic Mobility	42
3.4.2 Father Absence	43
3.4.3 Military Status	44
3.5 Criterion Variables	44
3.6 Procedure	44
3.7 Testing Sessions	47
3.7.1 Session 1	47
3.7.2 Session 2	47
3.7.3 Session 3	48
3.8 Data	48
3.9 Trial/Revised Information Surveys	49
3.10 Scoring Procedure	49
3.11 Design and Analysis	50
3.12 Summary	51
4. ANALYSES AND RESULTS	52
4.1 Sample Characteristics	52
4.2 Measurement and Reliability of the Data	54
4.2.1 Reliability Analysis	54

4.3	Descriptive Statistics	55
4.4	Correlational Analysis	57
4.5	Regression Analysis	61
4.6	Summary	62
5.	DISCUSSION AND RECOMMENDATIONS	63
5.1	Findings and Conclusions	63
5.1.1	Findings	63
5.1.2	Conclusions	66
5.2	Limitations of the Study	67
5.3	Recommendations	68
5.4	Summary	70
	REFERENCES	72
	APPENDIX A - Letter to Director General, Base Commanders, School Boards, Directors of Education, and Principals	82
	APPENDIX B - Additional Letter to Principals	83
	APPENDIX C - Letters to Testers	85
	APPENDIX D - Parent Information/Consent Survey	88
	APPENDIX E - Student Information Survey	96
	APPENDIX F - Student Records	99
	APPENDIX G - Informal Interviews	102

LIST OF TABLES

Table	Page
1 Summary of Findings in Research Literature	37
2 Distribution Sample by Department of National Defence Schools	53
3 Reliability Coefficient (KR 20) of Measures of Criterion Variables	55
4 Descriptive Statistics for the Criterion Variables and Cognitive Ability	56
5 Means and 95% Confidence Intervals (C.I.) for the Dependent Variables and Cognitive Ability	57
6 Variables Intercorrelation Matrix for Males	58
7 Variables Intercorrelation Matrix for Females	59
8 Partial Intercorrelations for Males	60
9 Partial Intercorrelations for Females	61

DEDICATION

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OVERVIEW OF THE STUDY

This study is presented in five chapters. Chapter One provides an overview of the specific problem under study and its importance. It includes an introduction, research questions, the rationale, definitions of important terms used in the study and the significance of why a study of this nature is needed.

Chapter Two includes a review of relevant literature which identifies previous explorations into the relationship between specific military life experiences (geographic mobility, father absence due to assignment, military status of father), and academic achievement and self-concept. A description of the military subculture completes this Chapter.

The research methods and procedures used in this study are described in detail in Chapter Three. This includes the research sample, instrumentation, classification of variables, procedure, data collection, research design and statistical analyses.

Chapter Four presents the analyses and results of the study as they relate to the research questions, including sample characteristics, reliability of the data, and testing of the questions.

Finally, Chapter Five presents the findings and conclusions, limitations of the study, and offers recommendations for further research on the prediction of school performance utilizing a unique subculture, dependants of Canadian military personnel.

CHAPTER 1

INTRODUCTION

Educators are continually seeking to identify and understand the many complex factors which influence student learning in school. Prediction of educational performance is a research strategy which attempts to analyze and estimate future performance. In such a framework, anticipated performance or realization of goals in education is a function of significant predictors, which can be classified into three general areas: student characteristics, school related factors including teacher characteristics, and home and community influences (Bloom, 1976; Bloom, Madaus & Hastings, 1981; Coleman, Campbell, Hobson, McPartland & Mood, 1966). School performance includes many goals such as academic skills, social competencies, attitudes, vocational skills, and creativity. Measured academic achievement is the widely and publicly used principal criterion of educational performance. Although it encompasses a variety of school subjects, achievement in reading, writing and arithmetic is basic.

It has become increasingly clear that individuals develop and achieve in a holistic manner. Causes of deficiencies or superiorities in student learning are numerous and varied, and may occur with the presence of certain basic abilities coupled with life experiences. The home and community environment can either disrupt or enhance learning. Knowing this, educators have also become interested in the development of a child's self-concept as a critical variable in education (Byrne, 1984). Self-concept is developed from evaluation by others, by comparing oneself to the attitudes and perceptions of others, and by direct and indirect life experiences (Argyle, 1967). If students lack a positive self-concept, they may become self-defeating, insecure, pessimistic about the ability to cope with

everyday problems and relationships with others (Smith, 1975).

Prediction of school performance has evolved over time. Early research primarily concerned itself with the prediction of academic potential. Grade point averages, aptitude, ability and intelligence tests have proven to be the best predictors of academic achievement and have been found, collectively, to account for 35–60% of the variation in academic performance (Donicht, 1975). No other single variable has been found to account for this much variance in achievement. Khan (1969) summarized numerous studies on academic prediction, stating that one half to three-quarters of the variability in achievement remains unexplained. Such a large portion of unexplained variance has intrigued researchers and prompted them to continue to identify, isolate, and investigate other factors as possible contributors to variability in school performance.

The Coleman Report (Coleman et al, 1966) showed that school-related predictors such as teacher characteristics and class size explained less variation in academic achievement than environmental and cultural experiences. Thus, interest in the prediction of school performance shifted from individual characteristics such as intelligence to measures of the external environment and lifestyle (Centra & Potter, 1980; Whalen & Fried, 1973). Shade (1982) suggested that a culturally induced lifestyle may affect school performance in different strengths and directions. The challenge for educational psychologists is to isolate subculture variables in order to identify which type of learning environments are most effective for specific subgroups and types of individuals. Research may then improve the accuracy of predicting school performance and aid in the manipulation of the learning environment to provide ideal conditions (Walberg, 1969).

Dependent children of military personnel are a unique portion of the school population in Canada and deserve more attention (Hunter & Nice, 1978; Stanley, 1983). The impact of the military milieu presents challenges which touch many facets in the life of a military dependent child. So far, evidence has not been collected to determine the extent, the pattern or the impact which the military subculture has on the development and maturation, the abilities or disabilities, the academic achievement and the self-concept of its children.

Military life is distinctly different from nonmilitary life (O'Connell, 1981), since it includes various environmental experiences that a civilian population rarely experiences. Military children have much to contend with, such as numerous relocations, disruption of family routines and school activities, lack of continuity, long distance moving, prolonged and/or frequent periods of father absence, attending a variety of military and civilian schools, community isolation and culture shock (Canadian Forces Personnel Newsletter, 1987; Cope, 1984).

After making an extensive review of the literature pertaining to the military subculture, families and education, three environmental conditions emerged as possible physical and psychological stressors for military children: geographic mobility, father absence due to assignment, and military status of father. These conditions provided a new field of inquiry, namely, to explore the impact of the military lifestyle on the school performance of Canadian military dependent children.

Researchers have recommended that studies be conducted which investigate a variety of different subcultures, examine various predictors, introduce new criteria or outcomes in an attempt to measure and predict more accurately school performance and to set new directions for future studies (Bloom, 1976). These

recommendations support the rationale for the questions in this study.

1.1 The Problem

Conditions of the military environment, geographic mobility, father absence and military status of father may be related to the school performance of a military dependant. The present investigation attempted to identify the relatedness (possible influence) of the three factors in the military environment to reading comprehension, mathematics, written expression and self-concept of military adolescents.

1.2 Purpose of the Study

Military adolescents are faced with a number of unique family and life experiences which may be related to the development and maintenance of their academic achievement and self-concept. Building upon existing research, this study attempted to explore the relatedness of three selected military environmental variables (geographic mobility, father absence due to assignment, military status of father) to the school performance (reading comprehension, mathematics, written expression, self-concept) of adolescents of military personnel.

Grouping with respect to gender (male, female) was used to explore possible differential effects. This could provide insight into the nature of the relationship between the predictors and the criterion measures. Without considering mediating variables, the actual impact of the selected predictors might not be as clear, or the nature of the predictor variables may differ within each subgroup. Past research has shown that cognitive ability is the most important

predictor of success in school, so it may affect the relationship between the predictors and the criterion. Therefore, studying the relationship between the variables of interest by controlling the influence of cognitive ability would provide further insight into the nature of the relationships between the predictor and criterion variables.

The study also sought to determine whether a military adolescent sample was similar to the normative group employed in the standardization and norming of the research instruments.

An attempt was made to contribute to the knowledge and understanding of the relationship between the home and community environment, and school performance by employing the following: a similar yet different community from previous American military studies; a more clearly defined geographic mobility index; and a newly normed Canadian instrument for cognitive ability and achievement measures. These alterations could assist in a more accurate and better generalized conceptualization of school performance, help resolve some inconsistencies in military research, and set new directions for further investigation.

The educational significance of this study included the following:

1. providing quantified data to document and address particular needs for parents, school administrators and teachers to look at their children's education;
2. influencing and assisting in the development, improvement and/or modification of educational objectives, guidance, placement, instruction, remediation and evaluation of programs for students; and
3. providing knowledge and research to guide specific recommendations which

might directly influence military educational policy.

At the time of this study, these data and knowledge were non-existent. This, in turn, prompted research involving the education of Canadian military dependants.

1.3 Research Questions

After a close examination of the literature pertaining to military children and their education, and conducting personal informal interviews with 50 active and retired military personnel and their spouses (see Appendix G), the following research questions were identified for this study:

1. **Question 1:**

How do the mean scores of grade ten dependants of Canadian military personnel compare with the published norms of the following measures: *(a) reading comprehension, (b) mathematics, (c) written expression, (d) self-concept, and (e) cognitive ability?*

2. **Question 2:**

Are the variables *geographic mobility, father absence due to assignment, and military status of the father* (of grade ten dependants of Canadian military personnel) significantly related to the following criterion measures: *(a) reading comprehension, (b) mathematics, (c) written expression, and (d) self-concept?*

1.4 Rationale

While the prediction of school performance has been applied to a variety of areas and people with various backgrounds, it has not, to the writer's knowledge, been extended to an investigation of Canadian military adolescent dependants and the relationship between three subculture variables (geographic mobility, father absence due to assignment, military status of father) and four indicators of school performance (reading comprehension, mathematics, written expression, self-concept).

Until recently, the military community has not been the subject of major educational research efforts. Of the military personnel who were married, the wife and family played a subordinate role to the demands of the military. Today, many of the military married members are very family oriented (Long, 1986).

The education of the dependent children of members of the Armed Forces has and always will be a major factor contributing to the good and bad morale of the Forces and without any doubt plays a major part in [the recruitment and] the retention of the members of the Forces (Morin, 1986, p.13).

Geographic mobility, father absence due to assignment, and military status of father are experiences uniquely different from the lifestyle of the nonmilitary in kind, degree, number and intensity. The capacity to cope with the demands and stresses brought about by military life, and the different roles the environment might play in relation to various areas of school performance need to be studied.

Studies suggest that students must undergo periods of adjustment before learning becomes efficient (Gallagher, 1965); that a continuous, sequential program

is necessary for school success; and that environmental continuity is important to facilitate the development of the self (Erickson, 1959). Based on number of moves, separations, and new beginnings, "the norm for military brats" (Long, 1986, p.31), this interruption could accumulate to the extent that students become so lost and upset that they seek some means of escape. Parents, educators and counsellors may encounter problems with these students in such areas as academic achievement, behavior and self-concept.

Special activities and programs have been initiated for students of varying experiences, abilities and backgrounds. Lack of evidence of factors that affect the military population creates a need for research. School personnel need to become sensitive and patient to the individual differences and needs of the military student, and be ready to help those who find difficulty in adjusting to a new school, new home, and new environment.

The development of skills and methods is necessary to help these students successfully function with the numerous and unique experiences encompassed in their complex subculture. Shade (1982) suggested that culturally different students may need alternate instructional approaches.

It is recognized that most military families experience periodic separation of the service member due to temporary duty, additional courses, and/or training manoeuvres. The effects of family separation as a result of father absence due to military assignment may be as powerful as, if not more, than the effects of geographic mobility (Staresnick, 1985). Although all family members must deal emotionally and physically with the strains of separation, the child does not have as much recourse to logic. Reaction to the absence is at least potentially detrimental to the well-being of the child. Studies concerned with the relationship

between father absence of military dependent children and school performance do not appear very often in the literature.

Socioeconomic status is a powerful variable and has consistently exhibited a significant association with student performance. Persons of different social class face different kinds of life situations, develop different values, attitudes, motivation and behavior (Cohn, 1971). The military subculture represents a restricted, yet very distinct social class system. Rank permeates the social and living environment as much as the work environment. This formal and informal rank system is expressed in the location and quality of housing, social clubs and recreational facilities separating officers and their families from the noncommissioned members and their families. Staesnick (1985) suggested that rank may be a powerful predictor variable.

Many studies investigating the relationship between predictor variables and school performance did not present data separately for males and females. Those that did found higher correlations between school performance for females than males (Khan, 1973; Lavin, 1965). Girls at all grade levels tend to receive higher marks from teachers and higher scores on achievement tests (Mitchell, 1980). From early adolescence to high school and possibly throughout their educational career, girls have greater verbal ability and receive better grades, while males are found to excel in visual, spatial, and mathematical ability (MacCoby & Jacklin, 1974).

Differences in societal expectations, norms, and roles for each gender are slowly changing. However, cultural standards for females generally inhibit direct, overt expression of physical or verbal aggression and demand passivity, obedience, dependency on interpersonal relations, as well as more concern for

acceptance by others. For males, passivity and dependency are scorned, while encouragement is given to expressed aggression (Hoffman, 1960).

Researchers have generally supported the notion that males and females react differently to environmental stress (O'Connell, 1981). Grady (1966) found a significant relationship between gender and academic potential of grade five students from both civilian and military homes. Sexual identity may be paramount to the military child who experiences various unique environmental influences. When males and females are not separated in analysis, the magnitude of the separate correlates are obscured. Variables that predict performance for males and females may well differ in magnitude and/or direction.

The selection of grade ten was prompted by three considerations. First, if there is a military life syndrome associated with academic achievement and self-concept, it may well be most apparent at grade ten when compared with the earlier grades. This would be the cumulative effect of approximately fifteen years of exposure to the military subculture, in addition to a minimum of ten years of military and/or civilian schools in several provinces and/or countries.

Secondly, most students have not reached the legal withdrawal age from school, thus providing a greater chance for obtaining subjects at various cognitive ability levels. Potential school dropouts are influenced by differences in provincial school leaving laws. In British Columbia, students may leave school at the age of fifteen years (B.C. Ministry of Education, personal communication, October 1986). However, the other provinces in this study enforce the regulation that students within the educational system continue until the end of the school year of their sixteenth birthday, excluding the summer months (Ministries of Education for Manitoba, Ontario and Quebec, personal communication, October 1986).

European-based Canadian military schools follow the policies and curriculum of the Ontario Ministry of Education. During the 1984-1985 school year, Ontario grade nine dropouts under the age of sixteen were less than one percent of the total population (Ontario Ministry of Education, 1985). Gallagher (1965) specified dropouts to be between the ages of sixteen and twenty-one. Thus, it is anticipated that the grade ten level would represent a near normal range of student abilities.

Thirdly, there has been a relatively small amount of research conducted at the grade ten level involving military adolescents. Also, as Shaw suggests, adolescents are in the process of defining their personal identities and have a strong identity with peers. It is "an age of transition when children are more vulnerable to crisis in their environment" (Shaw, 1979, p.36).

1.5 Definitions

The following definitions are provided to clarify their use in this study.

1. **Military Dependants** : Military dependants were students, who, since they were born, had fathers who were active employees of the Canadian Department of National Defence (DND).
2. **Geographic Mobility** : Geographic mobility referred to a categorization of mobility since the birth of the participating subject, derived by means of a combined additive point system. It comprised of three related issues:
 - a. number of times the student moved before school entry;
 - b. number of schools in which registered since the beginning of the student's formal education; and
 - c. nature of each move.

- 1) intradistrict or intrabase: a student who has changed schools within the same school district or base.
 - 2) intraprovince: a student who has moved across school district boundaries, but within the same province.
 - 3) interprovince: a student who has moved across provincial borders.
 - 4) intercountry: a student who has moved outside of Canada.
3. **Father Absence Due to Assignment** : Father absence was the accumulated number of months of the military father's absence due to assignment added to the frequency of these absences during the participating subject's lifetime.
 4. **Military Status** : Military status referred to the classification into officer and noncommissioned member of each participating student's father as declared at the time of the testing.
 5. **Gender** : The acknowledged maleness or femaleness of each subject as declared during the first testing session.
 6. **Cognitive Ability** : Cognitive ability was a standardized measure reflecting each student's ability to learn as measured by the Canadian Cognitive Abilities Test.
 7. **Academic Achievement** : Academic achievement referred to knowledge that has been attained and skills that have been developed in the specific academic areas of reading comprehension, mathematics and written expression as measured by the Canadian Tests of Basic Skills subtests.
 8. **Self-Concept** : Self-concept referred to the way people view themselves. It was the mental image of personal beliefs, abilities and attitudes about the self as reflected by ratings on The Way I Feel About Myself (Piers-Harris Children's Self-Concept Scale).

1.6 Need for the Study

There is no clear or widely accepted evidence of the relationship between military environmental factors and the academic achievement and self-concept of dependants of Canadian military personnel. This study was designed to provide some insight and help resolve some inconsistencies in previous research regarding these variables.

Many studies investigating school prediction were based on a limited sample size and/or a small sample of schools. This study attempted to use a similar yet different and broader sample, the total grade ten population of military adolescents attending Canadian Department of National Defence Schools.

Although education produces multiple outcomes, researchers often attempted to account for one criterion measure. This study investigated a wider range of school performance, the basics in education or better referred to as the 3 R's, and one affective measure, self-concept.

The possibility that more problems exist for a particular gender and that these problems may leave different marks on the academic achievement and self-concept patterns of military children warrants exploration. Studies not taking gender into account may attribute differences to other factors, when, in fact, this variable may have explained much of the difference. Additional research investigating gender differences is needed to provide more clearly defined school predictive trends (Vincent, 1977).

Due to the problems, benefits, costs, program changes and needs associated with the education of military dependants across Canada and in other countries, the results of this study may challenge, assist in confirming, or alter existing

military regulations as well as educational policies and practices. Many of these issues and policies are based on a number of assumptions, not research, and may not be appropriate or necessary today. This study may help document and influence the decision-making for special attention, counselling, and/or use of special instructional material for students with a military background. A continuing effort to improve the education of the military dependent student is not only essential, but society's responsibility.

1.7 Summary

Chapter I has provided an introduction to the study. The problem investigated was stated along with the purpose, research questions, rationale, definitions and need for the study. The major focus of this study was to determine if the predictor variables, selected on the bases of their importance as revealed by an extensive search of the literature and personal experience in the military, accounted for significant amounts of variance in the reading comprehension, mathematics, written expression and self-concept scores of students with a military background. The information presented in Chapter I establishes a basic understanding of the conceptual framework of this study which is substantiated and clarified by the review of the related literature presented in the next chapter.

CHAPTER 2

REVIEW OF RELEVANT LITERATURE

The purpose of this chapter is to present the research literature which has explored the relationship between certain predictors (geographic mobility, father absence due to assignment, military status of father), and selected outcomes (academic achievement, self-concept), emphasizing research pertaining to the military population.

2.1 Geographic Mobility

The problem of moving in relation to schooling has become a matter of considerable concern. (Snyder, 1969, p. 26)

The influence of geographic mobility on school achievement and self-concept has been a recurring focus. Beyond a doubt, past research has been inconclusive, rendering generalizations difficult. The diversity of findings in mobility research may be related to the unique characteristics of different communities, their populations, geographic diverseness of geographic mobility, and variations in research designs. Additionally, many research studies utilized a military and civilian student sample even though there is sufficient evidence that both groups come from separate and distinct environments (O'Connell, 1981).

Three conflicting theories have been found. The first is that geographic mobility is beneficial to a student's school performance (Crowder, 1970; Vincent, 1977). The second and more commonly held opinion is that mobility is disruptive and interferes with progress in school (Cope, 1984; Segal, 1986; Shaw, 1979). The third is that geographic mobility neither helps nor hinders educational attainment (Brantley, 1981; Ford, 1979).

Geographically mobile students have to make multiple adjustments in relationships within the community, the family, and the school. Most students new to a school, regardless of past achievement and social development, feel alienated and have difficulties adjusting to the transition. These difficulties may be compounded when the new student is not adequately equipped with the necessary academic and/or self-concept prerequisites. The military dependant often repeats and may therefore compound this possibly traumatic experience. How the schools manage this transitional period can be a most important influence on the future stability of a child's school performance.

The abrupt change of a living and learning environment can cause a child to be faced with major social difficulties. When children move, they leave behind all the significant people, with the exception of their families, who have helped to shape their self-concept. When they arrive at the new destination, they must again find people with whom to relate, and developing relationships takes time. Because the geographically mobile child puts down few roots, relationships tend to be superficial and tenuous (Darnauer, 1971, 1976; Khleif, 1970). However, repeated moving need not impede the formation of close, intimate friendships, although the quality may suffer.

In the midst of moving, children may experience a loss of parental attention. This could accentuate family problems and create or widen a gap between parents and their children (Gonzalez, 1970). Many families who have to move fear they are doing irreparable harm to their children (Morin, 1986). LaGrone (1978) concluded that 79% of the military children seen in a child clinic for psychiatric disorders had mobility contributing to their problems.

Some families avoid economically desirable moves or the family becomes separated so that the children can remain in a particular school. For example, a Canadian military policy allows families with a student completing junior or senior matriculation to stay on the present base while the military member reports for duty at the new location. The family then joins the military parent when the student has completed high school (F.A. Bussieres, personal communication, October 1986). Also when the military parent is assigned to duty away from the family, it can result in yet another move. Rosenfeld, Rosenstein and Raab (1973) found 40% of the wives moved to live with parents while the husband was absent.

There are differences in the educational standards and curricula provided by provincial and local governments. Due to provincial practices, a new school may not recognize credits granted by the previous school. Continuity of education for students who seldom spend a year or two in the same school is almost impossible, with a student likely to be asked to catch up in at least one subject. Often the child may feel on trial, and this can result in insecurity many months later. This newness is felt to contribute to the geographically mobile student's feelings of isolation, apprehension and insecurity.

On the other hand, there are advantages. Living a mobile life, military students may grow in their ability to cope with stress, become more flexible and adaptable, have a broader range of interests, develop skills in meeting people and making friends, and become more understanding and accepting of other people, cultures and customs. A military child usually accepts a newcomer, empathizing with the feeling of being a new kid on the block. The child in a military family may gain in experience from travel but may lose in formal education (Coates & Pellegrim, 1965).

A mobile population also produces more demands on teachers and administrators. There is a lack of time for teachers to get to know students and their needs. The more geographically mobile the community residents, the more difficult to maintain communication and cooperation between the school, the parents and the community. Additional effort is required to help integrate the new child into the classroom routine, especially if s/he arrives during the midyear. Knowing that the children will again be moving, staff may feel frustration and perhaps even be subtly influenced from working hard with the students (Levine, Wesolowski & Corbett, 1966; Strickland, 1971).

Few studies have looked at the effect of extremely high mobility on school performance (Moyers, 1985). Many studies combined moves of four or more, though military students were found to have moved four or more times by the sixth grade (Anderson, 1975; Brantley, 1981). Frequent short distance moves were also found to be a disruptive influence on children's development (Long, 1975). Pretzlaff (1970) studied mobility between districts and found greater disruption than for students who move within districts. Goebel (1974) found that, for males, preschool mobility had significant impact on school achievement.

2.1.1 Geographic Mobility and Achievement

The claim that overall academic achievement and achievement in specific subjects is adversely affected by military geographic mobility is supported by several researchers (Burget, 1965; Grady, 1966; Partin, 1967; Samson, 1969; Swanson, 1961). Grade six nonmilitary and nonmobile students excelled in reading achievement when compared with military subjects (Cope, 1984). Landman (1980) found military and nonmilitary students with low mobility associated with high achievement, high IQ and high SES. Stanley (1983) found mobility adversely

affected below average students.

There is research evidence that military mobile students are similar to geographically stable children on academic achievement (Baker, 1970; Brantley, 1981; Misner, 1973; Mittenzwei, 1985; Smith, 1975; Strickland, 1971). Hand (1969) investigated a sample of grade four and six students from military and nonmilitary families and examined mathematics achievement as the criterion variable. No significant mean differences were found.

Conversely, several studies have shown that military mobile students outperformed civilian nonmobile students (Crowder, 1970; Holcombe, 1969). Cramer and Dorsey (1970) looked at a military population of children of enlisted air force personnel who frequently changed residence and students who had maintained consistent residence. They found the reading achievement of the grade six mobile sample to be positively affected. Kenny (1967) studied 2,766 American military children, aged 10-17, living in a military community in West Germany. Using the Iowa Achievement Test, Kenny found the average overall academic achievement to be above the 75th percentile compared to the 50th percentile of the norms. In addition, the military students had a higher median I.Q. Snipes (1964) found that students who moved long distances had significantly higher IQs than non-movers.

Gender was found to differ significantly in studies on mobility (Burget, 1965; Grady, 1966; Swanson, 1961). Sackett (1935) was the first to note that military transient elementary girls had an advantage over boys within the same community. Partin (1967) assessed the academic achievement and adjustment of children in a limited number of elementary, junior and senior high schools. His analyses of the data indicated that for boys in grade nine, the military students'

grade point average was significantly better than that of the nonmilitary students.

2.1.2 Geographic Mobility and Self-Concept

There appears to be no one-to-one relationship between mobility and self-concept, although a child's perception of the self and subsequent behavior and performance have been related to family moves. Baker (1970) discovered that military students were less involved in school activities and argued that the loss of friends was devastating. Mobile military and civilian students obtained lower self-esteem scores than non-mobile civilians. Studying high school boys, Wooster and Harris (1972) concluded that constant relocation of military children may hinder the development of a positive concept. A continuous change of teachers, classmates, friends and neighbours could deprive military students of a stable reference group.

Stafford (1968) studied the effects of geographic mobility on the values, social integration and interpersonal relationships of 220 civilian and military high school seniors. After grouping the students according to levels of mobility, he found the more mobile student had feelings of greater social distance and alienation.

These findings conflict with research that showed mobility to have no significant impact on a child's self-concept (Mittenzwei, 1985; Stanley, 1983; Swanson, 1961; Vincent, 1977). Frequent moves were not found to be related to the development of an impaired self-concept in the military dependent child (Smith, 1975).

Furthermore, a few studies found mobility to facilitate adolescents' social adjustment (Falik, 1969; Jones, 1973). Military children were better able to adjust

to new social situations, although this advantage appeared to decline for children who had moved three or four times before entering grade six (Bledsoe, 1976).

On the other hand, geographic mobility may interfere with the formation and quality of friendships. Toffler (1970) stated that any relocation interferes with a complex interrelationship of old relationships and the establishment of new ones. This disruption, especially if repeated often, could breed a loss of commitment in forming relationships. There is little doubt that a portable education could have serious consequences for personality development (Bevis & Faunce, 1964).

2.2 Father Absence Due to Assignment

It is the episodic experience of transient father absence which has the most pathogenic effect on the child's evolving personality. (Privitera, 1977, p. 5)

The disruption of family routines, the parenting process and child development as a result of frequent and/or prolonged periods of military absence from the home has been the subject of limited research. In the military community, developmental and personality crises experienced by children may be related to intermittent father absence (Rosenfeld, Rosenstein & Raab, 1973; Staesnick, 1985).

The impact of a father's absence on a child's adjustment is highly complex since it relates to numerous variables such as the nature of the separation, age and gender of the child, attitude of the spouse toward the separation, quality of family relationships, availability of male surrogates during separation, as well as frequency and length of the absence (Hillenbrand, 1976). Forced family separations could produce considerable stress for the military child. Resourcefulness and resilience in adjusting to the strains of separation and reunions are necessary for

each of the family members. Longitudinal effects appear to be harmful for children (Margiotta, 1978).

In a military setting, father absence due to assignment is extremely different from other types of father absence. It is expected, socially accepted and temporary, though recurring (Carlsmith, 1973; Nice, 1978). Because it is temporary, it may be more difficult to tolerate. Assignments for Canadian military personnel include peacekeeping, training, assistance, courses and exchanges. The nature, frequency and length of each assignment varies for each member (Segal, 1986).

The literature describes this absence by means of a role adjustment cycle. First is the pre-absence, or anticipation of the absence. Second is the absence, with the family members adjusting and coping, yet maintaining the absent parent's image in the home. During this time family members, especially the mother, assimilate new roles. The mother has less time to spend with the children and is often caught up in her own emotional turmoil and single parenting resulting from the separation. Finally, the post-absence or family reunion occurs, with readjustment to the presence of the returning father and the restructuring of roles including those focusing on finances and discipline. There appears to be a concentration on the fulfillment of role obligations of the previously absent father to family members, possibly to compensate for his separation from the family (Privitera, 1977).

Reaction of a child to a father's absence may include feelings of resentment and guilt, exaggerated fears of separation/abandonment, and regression. It carries an overlay of anxiety in the home. Stress that evolves from separation might threaten family relations (Shaw, 1979). Shaw, Duffy and Privitera (1978) felt

father absence to be a developmental interference with the needs and rights of children, including the normal bonding between father and child.

And yet, the authoritarian style of household in many military families, with clear lines of obedience toward the father, may tend to compensate for frequent father absence. If the family is able to provide a supporting emotional framework, separation may have potentially beneficial effects. It may allow for the individual growth and development of each family member.

In a study by Darnauer (1971), father absence was rarely mentioned by military students as a problem. However, Yeatman (1981) found 37% of 258 military families mentioned readjustment was a problem. Dickerson and Arthur (1965) discovered that many military parents considered father absence and constant moving to be problems, although few parents seriously considered leaving the military. Knitter (1986) found no significant differences in emotional stages of submarine families experiencing shortened, more frequent separation/reunions and other navy families experiencing longer but less frequent deployments.

Baker, Fischer, Janda, Cove and Fagen (1967) asserted that outside support is crucial to the well-being of the military family experiencing father absence due to military orders. Peers, male teachers and surrogates play an important role in sex role identification.

2.2.1 Father Absence and Achievement

Literature that exists pertaining to father absence and school performance tends to deal mainly with the nonmilitary child and family instability.

Increased problems at home and school, aches and pains, aggressiveness, disobedience, and poor self-esteem can be experienced by children whose homes are not continually intact (Yeatman, 1981). However, Mitchell (1980) investigated grade nine military students from one school and found no relationship between father absence and achievement. In 1970, Oldaker, investigating grades two, four and six military and non-military students, noted positive results relating to students in grade two arithmetic and grade six language with a high degree of father absence.

Additional research is required to establish a relationship between father absence in the military and school attainment at the secondary level.

2.2.2 Father Absence and Self-Concept

Father absence is negatively associated with the development of a child's self-concept (Coopersmith, 1967). Rosenfeld, Rosenstein and Raab (1973) found Navy children in Israel had behavior problems, difficulties in school and feelings of sadness and depression as a result of father absence due to assignment. Children were found to worry about the absent father's safety. Gabower (1960) found father absence linked with increased behavior problems, trouble making friends and lower than average grades. Yeatman (1981) interviewed military children with various problems which appeared to start abruptly with the father's departure. Two thirds of military wives reported initial upset and unhappiness in their children, with boys being more difficult to manage (Yeatman, 1981).

Mothers of father-absent children are often isolated from social contacts, overprotective of their children and concerned with obedience within the family unit. Throughout the military years, mothers must adopt and then relinquish a dual role. Families may become matriarchial in nature.

Lynn and Sawrey (1959), with Norwegian sailor families as subjects, concluded that father absences were more damaging for boys than for girls because girls had their mothers as role models. Due to the lack of adequate males with whom to identify, boys were found to be more dependent, less self-confident, immature; moreover, they developed less adequate peer relationships, were more verbal and more overtly feminine. Boys were found to perceive father absence as more important than girls (Cortner, 1966).

Smith (1975), using a dichotomously scored variable for father absence, suggested that the amount of father absence generally did not impair an adolescent's self-concept, although military dependants were found to be less positive in their expression of self-concept than the normative group as a whole. Baker, Fischer, Janda, Cove and Fagen (1967) determined that military father absence of twelve or more months elicited problems within the family. It was noted that boys increased in masculine striving and had more difficulty with peer adjustment. The effects of father absence which occurred early in a child's life appeared to be more pervasive on the male child's development and self-concept (Hillenbrand, 1976).

In contrast to this, positive effects have been noted. Personality development of children, especially the eldest son, has been found to increase during the period of father-absence (Nice, 1978). The first born male is most likely to occupy the position of the 'responsible one' (Hillenbrand, 1976).

2.3 Military Status of Father

In general, when statistically significant differences exist within the military group, the children of officer personnel are favoured. (Hand, 1969, p. 207)

The socioeconomic level of a child's family creates and mediates the environment. An environment conducive to intellectual development is associated with an opportunity for continuous enrichment and learning. Well-educated parents, in general, are highly motivated, more able than others, with greater educational and occupational aspirations for their children. Thus, the aptitude, motivation, achievement and self-concept of students will be influenced.

Military officers tend to have higher income and higher educational attainment than noncommissioned members. The subculture of the military community revolves around the hierarchy of rank which is deeply set into the child's environment.

However, all children of military personnel living on the military base attend the same school. Thus, the school is composed of students from both officers and noncommissioned members. It is not segregated according to neighbourhoods of differing socioeconomic status as many civilian schools tend to be.

2.3.1 Military Status and Achievement

Rossi and Gilmartin (1979) related that socioeconomic status is presumed to account for a substantial amount of the remaining variance in academic achievement after ability. Children who grow up surrounded by people with higher intellectual levels have a better chance to achieve higher intellectual levels themselves. The social position of the student, favouring pupils from high social class families, was the most significant factor of scholastic achievement in the

investigation by Oldaker (1970), which examined the reading, mathematics, and language outcomes of military and nonmilitary children. As well, Landman (1980), studying military and nonmilitary grade five subjects, discovered socioeconomic status to be significantly related to achievement. Measures of achievement were consistently superior for the higher socioeconomic group. Burget (1965) used the occupational index rating of a child's parents with achievement on standardized tests and discovered that the higher index was consistently and positively related to reading achievement.

2.3.2 Military Status and Self-Concept

In discussing the relationship between military status and self-concept, few studies can be cited. A positive relationship between social class and self-concept has been observed (Marsh, 1971). The higher the SES, the greater the students' participation in school activities in a shorter period of time. Children of the higher social class were better adjusted to moving, made friends more easily, reported being happy and outgoing, and did not find changing schools difficult (O'Connell, 1981).

However, Smith (1975) looked at officers and noncommissioned members of grade seven to twelve students in one military school and found no significant difference on the total score of the Tennessee Self-Concept Scale. Nevertheless, children of officers had nine higher mean subscale scores than children of enlisted personnel. The sons of commissioned officers were found to be more aggressive and possessed more self-assurance than sons of noncommissioned members (Cortner, 1966).

Conversely, Hatmaker (1977) found grade five and six children of professional educators obtained higher self-esteem scores than children of

military personnel.

2.4 The Military Subculture

The child within the military system has been much neglected in the past. (Hunter & Nice, 1978, p. vii)

The Canadian military subculture is set apart from the general public and is a unified and highly organized group that cares for its own people. It can satisfy almost all physical and social needs within the tightly knit community. There is often little need for the outside world. This closed social environment, with its shared and secure identity and lifestyle, its unusual sense of interdependence and strong group identification, produces a special pride and bond among many military families.

Moreover, military families are particularly susceptible to a unique combination of stressors associated with the structure and function of the Canadian volunteer armed forces, such as air raid practices, bomb scares, and personnel with weapons (Broadhurst, Estey, Hughes, Jenkins & Martin, 1980). They are expected to willingly accept military life characterized by various experiences such as numerous relocations, family separations, alienations, culture shock and 24-hour on-call service. These experiences may have various effects upon the development and personality of children and adults within the military system (Privitera, 1977).

One of the more pronounced characteristics of the military family is repeated relocation. The military are presumably the most mobile group in society (Landman, 1980; Staesnick, 1985). Personnel have little choice concerning the location of each posting. If a vacancy arises, a Career Management Officer will transfer, without consultation, a member who can fill the position. This

transfer may occur at any time of the year. Research results state that major residence changes for the United States military personnel happen every two to three years (Margiotta, 1978; Mittenzwei, 1985). It has been estimated that the average military dependent child will attend nine schools prior to college graduation (Strickland, 1971).

Because relocation could be to anywhere in Canada and possibly to other countries, close contact with family and friends is more difficult (Segal, 1986). Military families do not have relatives or long-term friends close by to assist in their dealing with struggles and emergencies. This creates an interdependence with other military families, which results in a supportive network of friends and associates within the place in which one is residing (Rivlin, 1982). These military families have similar values and status and become the alternative to family relations, though continual change and dissolving of friendship ties is expected. Due to this uprooted and transplanted way of life for all members of the family, an intense dependency upon the family unit for emotional and physical support can result (Dickerson & Arthur, 1965). Military children live with the uncertainty of when and where the next transfer will come for themselves or their friends.

With relocation at any time to different provinces and foreign countries, including many isolated or remote areas, families personally experience and become familiar with contrasting cultures, languages, and the social and living customs of many people (Rainey, 1977; Shaw, 1979). Many become internationally mobile, broadening their minds by obtaining a global view of life (Cottrell, 1977).

Life overseas, with its enriched life experiences and opportunity for extensive travel, is different in many respects from living in Canada (Segal,

1986). Increased tolerance of different people, cultures and languages may develop (Rogers, 1982). Hunter (1982) found that military life helped to expand life experiences, values and acceptance of others. Geographic mobility was considered a positive experience with a multitude of advantages such as increasing knowledge, stimulating curiosity, encouraging imagination and developing flexibility (Smith, 1943).

However, many people experience "culture shock" which can be defined as the physical and emotional stress one experiences when interacting with another society or subculture with a resulting feeling of disorientation and helplessness (Kron, 1973). Those who fail to adjust to the demands of a new culture or situation may withdraw to avoid the stress (Bower, 1967). The impact of culture shock, feeling of alienation, impatience to return to Canada, disturbed perceptions relating to the distance from Canada, and temporary suspension of Canadian life style could have substantial effects on military children. It may assist them with skills to cope with the numerous experiences with military life but may, more often than not, affect them negatively. Cottrell (1977) argued that although military teens do feel their interests and activities are no different from those of civilian teens, the world view and racial attitudes of military teens appeared to lack prejudice. It may be that the altered predictors generated by residence in a foreign country are significant factors in relation to academic achievement and self-concept.

For some people, however, a posting to Europe may be like living in a "little Canada" in the midst of a foreign people. Most things of necessity are available at the military base, with no need to patronize the economy. This could serve to mitigate or eliminate many of the difficulties associated with adjustment to a new culture.

Service personnel can be frequently absent for such reasons as courses, isolation assignments, training, assistance and extended tours abroad (Shaw, 1979). Without prior notice, they are subject to immediate orders to depart for unaccompanied duty. Assignments may involve dangers on manoeuvres or combat operations. Yeatman (1981) reported that 47% of 258 military families experienced unaccompanied tour of duty. These separations override any family responsibility. In some families, children may be reared in what is virtually a single-parent family.

The lifestyle of the military community is remarkably homogeneous among military bases, including the schools, housing, chapels and so on. For military families living on a base, life normally revolves around base activities and facilities for safety, convenience, comfort and economy.

Military personnel are considered the middle range of socioeconomic status (Staresnick, 1985), with neither the extremely poor nor rich. The wage structure is compressed, though secure. On a base, little difference in the value of the homes is found. Nevertheless, there is a distinct hierarchy in the rank structure which differentiates the work, social and living structure. Life is predictably stable, orderly and rigid.

In addition, the parent in the military normally believes in a highly structured and strict household, normally paternalistic, with an extension of military rules and procedures stressing obedience and discipline (Hackett, 1969; Lyon & Oldaker, 1967). Compliance regarding a certain code of personal behavior in the military community is mandatory for every member of the family. If the wife or children cause problems, this may interfere with the military member's career (Keller, 1973; Long, 1986).

The goals and aspirations of the spouse, generally the wife, must be secondary to the career of the military parent (Segal, 1986). The military demands commitment, self-sacrifice and dedication from all members of the family.

Military personnel retire at an earlier age than is the pattern for other occupational groups in the Canadian culture. Thus, the community is normally void of the older generation.

Comprehensive medical and pharmaceutical care, social work, dental, some legal and other services are provided by the armed forces and are free of charge or at reduced rates (Long, 1986). As well, numerous on-base social and recreational activities are available. Military operated facilities for shopping and entertainment are within the confines of the military base. Gas, food and commodities sell for reasonable prices at the base Canex. There is often a base newspaper and a community council assisting in the running of base activities. Military police, firemen, and commissionaires surround and support the system.

Housing, although limited and not up to today's appearances, is available at reasonable cost (Segal, 1986). Often there is a waiting list for the PMQ (permanent married quarters), and this may result in an additional move for the family to a motel or rental facility (Marsh, 1971). Military messes for the divided ranks are available and provide social facilities. Functions planned by military personnel are numerous and are enjoyed at moderate costs. Only two churches are found on a military base: Roman Catholic and Protestant. In some cases, families join civilian churches. The Canadian military population is predominantly Caucasian. Knowledge of the French language is of considerable value.

Occasionally military families live off the base in the surrounding area. Reasons may be simply an aversion to the negative side of the military which contains restrictions, lack of choice in housing, invasion of privacy, or a constricted milieu. As well, living off the base may be for investment purposes (Blochberger, 1971).

Differences may be found in the pattern of lifestyles between military families living on and off the base. The civilian community has been together for a long time with well-established social circles which are difficult to penetrate. The neighbours are aware that the military family is transient. Problems can occur as these military families do not identify with or integrate into either the civilian or military community (McIntire & Drummond, 1977). McKain (1973) discovered that families that lived off-base had a significantly high correlation between alienation and family problems. Conversely, Blochberger's (1971) investigation showed no significant differences between adolescent dependants who lived on or off base.

Over 45,000 children of Canadian military personnel require education annually (Holtzhauer, Barrieau, Meller & Barr, 1985). Since 1947, the Canadian Department of National Defence has assumed responsibility for all Canadian military dependants throughout the world. Provision of military schools for the children of military personnel makes the service career more attractive and aids in recruitment and retention (Morin, 1986). At present, 66 military schools on 38 bases are provided for the purpose of dependent education. Many military schools are small and rural in the sense of being away from large cities. Restriction of courses offered is unavoidable.

Due to the fact that not all military bases have military schools, students attend a number of military and civilian schools in many districts, provinces, and countries. Approximately 25% of the military school age dependants attend civilian neighbouring schools yearly, mostly at the high school level (Department of National Defence [DND], 1985).

Complications may result when military children are faced with attending civilian schools. A civilian community has a set of values different from those of the military community (O'Connell, 1981). It is often difficult for military children to integrate into civilian school groups because civilian children have been together since the early school years. Cliques become extremely important by junior high school, increasing the difficulty of making friends for adolescents. Rejection often results until the military newcomers can prove themselves worthy of acceptance. Military students may become confused, anxious, withdrawn and repressed.

However, military students, upon entering military schools have familiar values and experiences as do the students who have attended the school for a few years. Hence, newcomers often find students to be more sensitive to and considerate of their particular needs. Military dependants normally remain together rather than make friends with civilian students. There appears to be a special bond between military students. They must deal with any negative images other students, as well as society in general, have of the military. "The values and beliefs of the military are far from universally endorsed" (Long, 1986, p.32).

The constant turnover of children in the military schools demands that administrators and teachers face more responsibility in adjusting and adapting programs and schedules, teacher loads, office staff and finances in an effort to

better serve the needs of the student. If a transfer occurs during the school year, the education of the newcomer as well as of the students presently within the classroom is temporarily interrupted. Mid-year arrivals and departures frequently occur. Medders (1973) discovered that 50% of the military subjects had moved during the middle of the school year. With constant relocation, there is little opportunity for students to experience educational continuity with familiar teachers (Gallagher, 1965), and inadequate time for counsellors and teachers to get to know such children and their problems. There is little chance for effective counselling or time for adequate rehabilitation. Also due to the numerous transfers, military students may attend school less frequently and participate less in extra-curricular activities (Swanson, 1961).

Military policies provide a compassionate posting to larger cities for families who have a handicapped child. Provisions for special education are not provided on many military bases, and therefore these families may live off-base to be closer to their child's school. Students attending military schools do not get the opportunity to become acquainted with the student who needs special education.

In addition to constant student turnover in military schools, Canadian teachers in Europe are appointed for a two-year period, with a possibility of an extension. This adds to the continual change within the European military educational system. Glasman and Biniaminov (1981) found teacher turnover negatively affected student achievement in Europe.

Religious education must be taught in the elementary school system. Religious education is divided into Protestant and Roman Catholic.

With each move -- coupled with the adjustment to a new school, new teachers, new home, new neighbourhood, new environment, and new peer group -- is the trauma of missing old friends, beloved teachers, relatives, coaches, and others. It is difficult to maintain continuous ties outside the immediate family. Since the distance for visiting is often too great, the primary means of keeping in touch is by mail. Khleif (1970), in an extensive study of 60 classrooms, found that sixth grade military children listed more than 25% of their friends as residing outside the local community, compared to the 10% listed by the civilian nonmobile sixth grade children.

As a protective measure against leaving and the fear of getting hurt, the military child may put down fewer roots and develop superficial relationships. Mobile children viewed friendships as very tenuous and constantly subject to change while nonmobile children viewed their friends as more permanent and important parts of their environment (Shaw, 1979).

Because the individual and community are in the process of constant and rapid transition, continual adjustment and a regular turnover of membership is a part of many organizations (e.g., scouting, sports). Tracking down organizations on the new base, getting involved, and then having to leave and start again at the next military community are constant concerns and lead many to a gradual reluctance to join organizations and a tendency to withdraw from organizations entirely.

Special services, such as counselling officers and military chaplains are available to aid families in coming to terms with the potentially stressful problems of military life such as relocation and parental separation.

2.5 Summary

Studies discussed in this review have yielded disparity in the findings and illustrate the complexity of the process involved in determining relationships between the environmental factors used in this study and academic achievement and self-concept. Nevertheless, these studies have offered evidence of the generally strong relatedness geographic mobility, father absence, and military status have to school performance. The literature is summarized in Table 1 below.

Table 1
Summary of Findings in Research Literature

Positive Effect	No Effect	Negative Effect
<u>Geographic Mobility</u>		
Snipes (1964)	Swanson (1961)	Partin (1967)
Kenny (1967)	Hand (1969)	Stafford (1968)
Partin (1967)	Baker (1970)	Baker (1970)
Falik (1969)	Strickland (1971)	Bledsoe (1976)
Holcombe (1969)	Misner (1973)	Shaw (1979)
Cramer & Dorsey (1970)	Smith (1975)	Landman (1980)
Crowder (1970)	Ford (1979)	Glasman et al (1981)
Jones (1973)	Brantley (1981)	Stanley (1983)
Vincent (1973)	Stanley (1983)	Cope (1984)
	Mittenzwei (1985)	Segal (1986)
<u>Father Absence</u>		
Oldaker (1970)	Darnauer (1971)	Lynn & Sawrey (1959)
Hillenbrand (1976)	Smith (1975)	Gabower (1960)
Nice (1978)	Mitchell (1980)	Baker et al (1967)
	Knitter (1986)	Rosenfeld et al (1973)
		Margiotta (1978)
		Yeatman (1981)
<u>Military Status</u>		
Burget (1965)	Smith (1975)	
Cortner (1966)		
Oldaker (1970)		
Marsh (1971)		
Landman (1980)		
O'Connell (1981)		

CHAPTER 3

METHODOLOGY

This chapter describes the research sample, instruments and procedures used in gathering the data, and the design of the study. The chapter concludes with a brief explanation of the statistical analysis of the data.

3.1 Research Sample

All Canadian military dependants registered in grade ten Canadian Department of National Defence Schools in Canada and Europe, who, since they were born, have fathers who have been members of the military, were requested to participate. This encompassed students whose fathers were presently stationed at one of the following military bases: C.F.S. Holberg, British Columbia; C.F.B. Shilo, Manitoba; C.F.B. Borden and C.F.B. Petawawa, Ontario; C.F.S. Senneterre and C.F.B. Valcartier, Quebec; C.F.B. Baden-Soellingen and C.F.B. Lahr, West Germany, as well as Brunssum, Netherlands. Each of these schools is located on the military base and serves the dependants of military personnel stationed there. The characteristics of the sample are described in the next chapter.

3.2 Instruments

Students were assessed on the following psychoeducational instruments:

1. Canadian Cognitive Abilities Test, (multilevel ed.), Level G; grades 10 & 11.
2. Canadian Tests of Basic Skills, High School Multilevel Edition; Level 16, grade 10; subtests: (a) reading comprehension, (b) mathematics, (c) written expression.

3. The Way I Feel About Myself (Piers–Harris Children’s Self–Concept Scale); grades 3 to 12.

3.3 Description of Assessment Instruments

3.3.1 *Canadian Cognitive Abilities Test*

The Canadian Cognitive Abilities Test (Wright, 1982) encompasses three batteries for a better assessment of learning potential, measuring scholastic aptitude and abstract reasoning ability. It attempts to provide, in a group setting, the full assessment of a student’s abilities, without unfairly penalizing students who are weak in reading or language. The three batteries are: a verbal battery which examines vocabulary, sentence completion, verbal classification, and verbal analogies, taking 34 minutes to administer; a quantitative battery which tests quantitative relations, number series, and equation building in 32 minutes; and a nonverbal battery which assesses figure classification, figure analogies, and figure synthesis in 32 minutes.

For each separate subtest, raw scores and the following norm–related scores are available: standard scores, percentile ranks and stanines, given separately for age and grade.

When testing with a single battery, one is limited to generalizing to a comparable set of test items given without a time interval. However, the Kuder–Richardson (KR) Formula #20, or coefficient alpha, was used separately for each subtest to provide such an estimate. KR #20 reliability estimates for Multilevel G, grade 10 are: verbal subtest .93, quantitative subtest .90 and nonverbal subtest .90.

The test may be administered by the classroom teacher. Canadian norms are based on results from more than 2200 students from 180 schools in over 110 school districts from the ten provinces and the Territories.

3.3.2 Canadian Tests of Basic Skills

The Canadian Tests of Basic Skills (King, 1982) is a group test which measures the content of today's instructional programs and relates the performance of students to their contemporaries in terms of national norms. It provides both criterion-referenced and norm-referenced evaluation permitting test results to be meaningful and useful.

Based on objectives stated in textbooks, curriculum guides, and instructional materials used by school systems in all parts of Canada, the test provides four overlapping levels per subject. The subject areas include reading comprehension, mathematics, written expression, and using sources of information. Each is available as a separate test, measuring understanding and knowledge in that particular area.

Standardization involved the same population, at approximately the same time, and under the same conditions as the Canadian Cognitive Abilities Test. The scoring system provides raw scores and norm-related percentile rank, standard score and stanine equivalents. The test may be teacher administered. The three subtests chosen in this study for measurement, evaluation and analysis were reading comprehension, with administration taking 40 minutes; mathematics, 40 minutes; and written expression, 40 minutes.

The reliability data come from the application of the Kuder-Richardson Formula 20 (KR #20) procedures based on the entire national standardization sample. Level 16 reliability for reading comprehension was .90; for mathematics

.88; and written expression .87. The validity of the CTBS battery is, in part, based upon reliability figures (Peter Cameron, Nelson Publishing Co., Toronto, personal communication, July 1988).

3.3.3 The Way I Feel About Myself

The purpose of the revised Piers-Harris Children's Self-Concept Scale (Piers & Harris, 1984) was to measure general self-concept in students from grade three through grade twelve. This American self-report instrument was primarily designed for research. It can be administered individually, in a group setting, or self-administered.

The test is written at the third grade level of reading. Each of the eighty items requires a yes-no response. Items are scored in the direction of high self-concept. Administration time is approximately fifteen to twenty minutes, although there is no set time limit.

The test produces raw scores and norm-related percentile rankings and stanine scores. Average scores are usually considered to be between raw scores of forty and sixty out of a possible eighty, or between the thirty-first and seventieth percentiles.

Cluster scores can be obtained from the responses to six major factors on the scale: statements of behavior, intellectual and school status, physical appearance and attributes, anxiety, popularity, as well as happiness and satisfaction.

This test falls under the level B administrators, as defined by the American Psychological Association (1966). Therefore, qualified testers are necessary for the administration and interpretation of this test.

Standardization of this instrument was done with grades three, six and ten. Norms are based on 1183 public school children from grades four through twelve. The split-half reliability is 0.87 and the test-retest reliability ranges from 0.71 to 0.77.

The construct validity coefficient assessed in relation to another self-concept measure was 0.68. Shavelson, Hubner and Stanton (1976) stated that the Piers-Harris Children's Self-Concept Scale appears to be one of the best measures available for assessing children's self-concept. Although no instrument is totally reliable or valid, Shreve (1973) concluded that of four self-concept instruments considered, the most satisfactory test for measuring self-concept of students was the Piers-Harris Children's Self-Concept Scale.

An American self-concept test was employed for use in this study as no Canadian test was available. However, Dyson and Edgar (1986) found no significant differences between mean scores from samples taken in the two different regions (Canada and United States).

3.4 Predictor Variables

The predictor variables in this study were: (1) *geographic mobility*, (2) *father absence due to assignment*, and (3) *military status of father*.

3.4.1 *Geographic Mobility*

There is a lack of consensus in research on what constitutes geographic mobility. Some previous studies used "one or more moves" as criterion to establish a mobility factor (Cope, 1984; Hand, 1969). However, Staesnick (1985) discovered that the United States military families can move every 18 months,

on the average, and sometimes more often. Thus, one or more moves seemed inadequate.

Mobility is a complex variable. The greater the distance moved, the greater would seem the adjustment demands on the mover, especially in the area of school curriculum (Levine, Wesoloski & Corbett, 1966), contact with previous friends, and environment changes. Adjustment factors would appear to be more complex with a move between provinces or to Europe (Kroger, 1977). Strains of the number and distance of relocations appear to be varied and possibly cumulative in effect (Moyers, 1985).

Relocation before entrance into elementary school needs to be taken into account, as the roots of later development are firmly planted in the first years of life. At this time, the initial concepts of friendship and socialization are formed (Rubin, 1980).

As researchers have recognized the need for new dimensions in the investigation of mobility (Lehman, 1964; Lowell, 1975), this study considered an additive weighting scheme. Following this a score of 1 was given for each move from birth until school entry. A score of 1 was given for each intrabase or intradistrict move; a score of 2 for each intraprovincial move; a score of 3 for each interprovincial move and a score of 4 for each intercountry move (Greene & Daughtry, 1961).

3.4.2 Father Absence

Frequent father absence on short temporary assignments and manoeuvres as well as extended absenteeism can create problems for the family. Thus, an attempt to measure the cumulative effect of duration and frequency of father absence was carried out. Father absence during the subject's lifetime was

tabulated in number of months absent added to the total number of absences (Staresnick, 1985).

3.4.3 Military Status

There is a traditional gap between officers and enlisted service members. The educational levels of officers and noncommissioned members differentiate social status, determining with whom the members of the family associate and their neighbourhood.

In this study, two categories were used: noncommissioned members and officers. This concurs with the military subculture where the working, living, housing and social life of the family is dictated by membership in either of the two mutually exclusive categories. Noncommissioned members included private, corporal, master corporal, sergeant, warrant officer, master warrant officer, chief warrant officer. Officers encompassed second lieutenant, lieutenant, captain, major, lieutenant-colonel, colonel, brigadier-general, major-general, lieutenant-general and general.

3.5 Criterion Variables

The following criterion variables were examined within the study: *(1) reading comprehension, (2) mathematics, (3) written expression, and (4) self-concept.*

3.6 Procedure

This study began with approval from the Director General, Dependants Education Programs, Department of National Defence. Following endorsement, approval from the Base Commanders at the following C.F.B./C.F.S. Bases was

obtained: Holberg, British Columbia; Shilo, Manitoba; Borden and Petawawa, Ontario; Senneterre and Valcartier, Quebec; Baden-Soellingen and Lahr, West Germany; and Brunssum, Netherlands. These included all schools on Canadian military bases which provide education for grade ten students.

After consent from the Base Commanders was obtained, the researcher contacted the Board of Education Chairperson and Director of Education for each base and received approval for conducting the study. At this time, the nine principals of the military schools offering grade ten were approached individually for their support and approval. Principals were also asked for the selection of a qualified teacher/counsellor to administer the tests.

A code number for each student selected was employed and was the only means of identification used by the researcher. Anonymity was guaranteed to all subjects and their families. For example, in "A01" A indicates school code (school code from A to I), 01 indicates subject number (subject number from 01 to 99 for each school)

Detailed directions, testing protocols, and materials were sent to the testers via each principal. Assessors were requested to review and follow each manual procedure. The testing period was to be scheduled at the assessor's and the school's convenience, during the month of April. The testers were asked to use three consecutive days for testing: Tuesday, Wednesday and Thursday from 9:00 a.m. to 10:30 a.m. if possible. Since the majority of military postings take place in summer, the battery of scales measuring the criterion variables were administered during the spring to allow new students ample adjustment time.

A parent information survey/consent form explaining the general purpose of the study, giving background information about the researcher, and requesting

permission to include their child in the study was sent to the parents of all students registered in the grade ten homeroom. Students were responsible for transporting the questionnaire to their parents and returning it to the school after completion. Background information requested the number of moves (since birth) of the participating child until entry into school, including destination and age at each move, the present rank of the military parent and the amount of time and frequency the father was absent due to military assignment during the subject's lifetime (see Appendix D). A permission slip and return envelope were included. Teachers and administrators assisted the researcher by disseminating the parent information survey/consent form and collecting the response envelopes.

The student information survey requested the student's record of school mobility since s/he first entered formal schooling (see Appendix E). This was given to each student at the beginning of testing Session I following the reading of the Request for Subject Participation by the tester (see Appendix D).

Student school records were used to gather information on the geographic mobility variable including names of all schools previously registered with date and grade at entry and exit. This information was recorded by the clerical staff selected by the principal within each school after permission was granted by the parents on the consent forms. The study was evaluated for acceptability by the Behavioral Sciences Screening Committee for Research and Other Studies Involving Human Subjects at the University of British Columbia.

In addition to the formal data collected, the researcher had earlier conducted semi-structured, open-ended interviews with seventeen active and two retired military personnel and spouses who were available and willing to participate. Information was gathered regarding their views of military life and how they felt military life related to their children's academic achievement and self-concept

(see Appendix G). The information obtained was used by the researcher to assist in the formulation of the questions of this research as well as to assist in the interpretation of the data.

3.7 Testing Sessions

All assessment measures were administered to the participating students in a predetermined order during the month of April, 1987 by a qualified tester. Each principal was requested to select one tester who had qualifications and was experienced in the area of psychoeducational assessment to conduct all three testing sessions. Necessary care was taken to ensure uniformity in the administration of the tests and surveys across the nine schools, four provinces and three countries. A written guideline titled Examiner's Responsibilities was provided for each tester (see Appendix C).

3.7.1 *Session 1*

Session I began with the reading of the Request for Subject Participation. Following this, the student information survey and the Canadian Cognitive Abilities Test, verbal and quantitative battery, were group administered. The testing session was held between 9:00 and 10:30 a.m. The total time for administration of session I was approximately seventy-five minutes, including a five minute recess between the two tests.

3.7.2 *Session 2*

The Canadian Cognitive Abilities Test, Nonverbal Battery, followed by the Canadian Tests of Basic Skills, Written Expression, and the Piers-Harris Children's Self-Concept Scale were administered in a group setting the day following

session I. The total time for administration of session II was approximately eighty-five minutes including two five minute breaks. This session was held between 9:00 and 10:30 a.m. Each group was tested by the same qualified tester.

3.7.3 Session 3

The Canadian Tests of Basic Skills, Reading Comprehension and Mathematics were group administered the day following session II. The total administration time of session III was approximately eighty-five minutes including a five minute recess between the administration of the two tests. This session was also held between 9:00 and 10:30 a.m., and was administered by the same tester.

Thus one qualified assessor in each school tested all students at that school. The three testing sessions were to alleviate fatigue. Schools were advised to use three consecutive days for testing: Tuesday, Wednesday and Thursday if possible. The total time for administration of the three sessions was approximately four hours.

3.8 Data

A cognitive ability score was obtained from the Canadian Cognitive Abilities Test. Achievement scores in Reading Comprehension, Mathematics and Written Expression were obtained from the subtests of the Canadian Tests of Basic Skills. A self-concept score was obtained from the Piers-Harris Children's Self-Concept Scale.

It was requested that a parent information survey be completed by the subject's mother, if available, in consultation with her husband. This provided data on geographic mobility - number of times subject has moved between birth and

first entry into formal school, with destination, date and age of subject at each move; absence of military father, including approximate dates, location and assignment; and military status – rank of military parent(s).

A Student Information Survey scale provided data on geographic mobility – address of schools previously attended, with date and grade at entry and exit.

It was requested that the Student School Records be completed by the school secretary. This provided data on geographic mobility – address of schools previously attended, with date and grade at entry and exit. This was an additional source of data collected for cross checking geographic mobility.

3.9 Trial/Revised Information Surveys

The author devised trial information surveys for parent, student and school records which were administered to a sample of military parents, ninth-grade students and secretaries at C.F.B. Borden, Ontario and the Vancouver Detachment, British Columbia. The purpose was to check for ease of understanding with possible revision of questions. Minor changes were made in the instrument as a consequence of the pilot tests. The revised information surveys were administered to the respective parents, students and school secretaries participating in the study.

3.10 Scoring Procedure

All completed test protocols and information surveys were returned to the researcher. The researcher did all hand and computer scoring which was verified to be 100% accurate by a hired assistant. Students were categorized by gender

(male, female) based on the student information survey. (see Appendix E).

3.11 Design and Analysis

This study is descriptive in design. Data were collected through tests and questionnaires. Analysis was predominantly through the use of descriptive statistics, although inferential statistics were carried out where required.

Correlations and partial correlations were used to study the relationships among the variables. Stepwise multiple linear regression analysis (Pedhauzer, 1982) was used to determine the amount of variance in the dependent variables accounted for by selected military environmental variables. The SPSS:X multiple regression program was used to analyze the contributions predictor variables made to the variation of any given criterion variable.

The predictor variables were introduced in order of the strength of their correlation with each of the four criterion variables. In this statistical procedure, the variable which enters first explains the greatest amount of variance in the criterion variable. This variable has the largest squared partial correlation with the criterion variable. The next variable which enters the equation explains the greatest amount of variance after the variance due to the first predictor. Likewise, subsequent variables that enter the equation accounted for additional variance. At each step of this procedure, there is a computation of the coefficient of multiple correlation to show the importance of the addition of each successive variable.

Standardized beta weights were used to enable the interpretation of the influence of interval and dichotomous variables. Standardized beta weights placed the net regression coefficients on a comparable basis, allowing the possibility of

determining the relative influence of each predictor variable on each criterion variable (Marascuilo & Levin, 1983; Pedhazur, 1982).

In addition, this study employed descriptive statistics including means, standard deviations and sample sizes calculated for all criterion variables.

Test analysis for determining the reliability of each criterion measure was also employed. The reliability indices were calculated by the SPSS:X subprogram Reliabilities.

The research sample was also compared with norming samples for the tests used in this study through construction of confidence intervals.

3.12 Summary

This chapter has explained the selection of the research sample, instrumentation, procedures, data collection and scoring, research design and an explanation of the statistical analysis.

Data were collected from five psychoeducational instruments plus the parental information/consent survey, the student information survey and the student's school records. They were then coded and transferred to the computer for statistical analyses. The following chapter provides the results of data analysis.

CHAPTER 4

ANALYSES AND RESULTS

The first section of this chapter describes the sample. The second section presents the reliability analysis of the instruments. In the third section are the descriptive statistics for the criterion variables. Finally, in section four are the results of correlational and regression analysis which address the research questions.

4.1 Sample Characteristics

All subjects in this study were grade ten students who ranged in age from 14.9 years to 17.5 years, a spread of 2.6 years. The modal age was 15.9 years and the mean 16.0 years. Forty-five percent of the subjects were male and fifty-five percent were female.

The geographic mobility index ranged from 4 to 36, with a mean of 11.9. Forty-eight of the students had not lived outside Canada. The mean for the father absence index was 55.1 with a range from 5 to 165. Of the 119 subjects, 96 (80.67%) were children of noncommissioned officers and 23 (19.33%) were children of officers.

The 119 subjects in the study represented approximately 64% of the grade ten students presently attending Canadian Department of National Defence Schools and whose father had been in the military since their birth (see Table 2). Although initially consenting to the study, two schools out of the nine chose not to test, thus eliminating some 50 potential students. In addition, one subject dropped out following the first testing session and 13 students did not obtain

parental consent.

This group of 119 subjects was assumed to represent the population of grade ten students in DND schools in 1987, because military families are posted frequently and potentially to any of the Canadian military bases; military personnel do not choose their posting; all grade ten students attending military schools were potential subjects; and all three military divisions (army, navy, air force) were included.

Table 2

Distribution of Sample by Department of National Defence Schools

School Name	Location of School	n
San Josef	Holberg, British Columbia	3
Princess Elizabeth	Shilo, Manitoba	16
Borden Collegiate Inst.	Borden, Ontario	32
General Panet High	Petawawa, Ontario	35
St. Michaels Algonquin	Senneterre, Quebec	1
Dollard des Ormeaux	Valcartier, Quebec	12
Baden Senior	Baden-Soellingen, Germany	20
Lahr Senior	Lahr, Germany	0
AFCENT International	Brunssum, Netherlands	0

Total: 119

4.2 Measurement and Reliability of the Data

Various measurement scales were involved in collecting the data. Gender was identified as representing nominal data while military status was considered to be ordinal. In the results, the direction on gender is a result of the coding; male=1, female=2. The remaining measures, namely age, geographic mobility, father absence, cognitive ability, reading comprehension, mathematics, written expression and self-concept were identified as interval or ratio measures. All coding and computer entry of data were subject to a 100% verification process. Some data were missing and are noted where appropriate.

4.2.1 *Reliability Analysis*

The Kuder-Richardson Formula 20 (KR 20) reliability coefficients are reported by the publishers of the Canadian Cognitive Abilities Test (CCAT) and Canadian Tests of Basic Skills (CTBS). The test-retest method was employed as the reliability measure for the Piers-Harris Children's Self-Concept Scale (Wing, 1966). To determine the internal-consistency of each criterion measure used in this study, the Kuder-Richardson Formula 20 was employed. This provided comparable measures to those published for the CCAT and CTBS (see Table 3).

SPSS:X computer subprogram Reliability was the program used to obtain Cronbach's Alpha for each criterion variable. Provided the data for analysis is dichotomous, the Cronbach Alpha is equal to the Kuder-Richardson Formula 20 reliability coefficient (*SPSS:X user's guide*, 1986). For this reliability measure, the data were scored right or wrong. The reliability of the tests assessed was found to be acceptably high.

Table 3

Reliability Coefficients (KR #20) of Criterion Measures

Measure	Published	Study
Canadian Tests of Basic Skills		
<i>Reading Comprehension</i>	.90	.92
<i>Mathematics</i>	.88	.90
<i>Written Expression</i>	.87	.88
Piers-Harris Self-Concept Scale	.77 ¹	.93
Canadian Cognitive Abilities Test		
<i>Verbal</i>	.93	.91
<i>Quantitative</i>	.90	.83
<i>Nonverbal</i>	.90	.91
<i>Full scale</i>	... ²	.93

¹ PHCSCS test-retest reliability is on grade five students.

² not available.

4.3 Descriptive Statistics

Descriptive statistics for the criterion measures are presented in Table 4. An inspection of the norming sample standard deviations shows that the study's distributions were within the expected range. The distributions for each subgroup were near normal. There was a significant difference in the performance of males and females in mathematics, $t(114)=2.99$, $p < .05$. On self-concept and other

Table 4

Descriptive Statistics for the Criterion Variables and Cognitive Ability¹

Group	Rdg. Comp.	Math	Writt. Exp.	Self-Con.	Cog. Ability
	Mean (sd)	Mean (sd)	Mean (sd)	Mean (sd)	Mean (sd)
Sample	39.96 (10.46) n=116	28.13 (8.17) n=116	34.96 (8.95) n=117	56.66 (10.50) n=118	163.19 (31.74) n=119
Male	41.37 (9.37) n=54	30.50 (8.35) n=54	35.24 (8.89) n=54	57.59 (10.60) n=54	169.33 (32.71) n=54
Female	38.73 (11.26) n=62	26.07 (7.49) n=62	34.71 (9.06) n=63	55.88 (10.44) n=64	158.08 (30.30) n=65

¹ n's vary due to missing data.

achievement measures the difference in the performance of males and females was not statistically significant at this level.

The research sample means were compared with the statistics for the norming sample for each of the achievement measures and cognitive ability. The means and the confidence interval limits are presented in Table 5. It can be seen in Table 5 that the sample in this study compared favourably with the norming sample in self-concept and written expression. In reading comprehension

and mathematics only the males do not fall within the confidence limits of the norming sample. In cognitive ability, the research sample differed from the norming sample – the research sample had higher cognitive ability as reflected in higher means.

Table 5

Means and 95% Confidence Intervals (C.I.) for the Dependent Variables and Cognitive Ability¹

Test	Norming			Study Sample Mean	Mean	
	Sample Mean	.95 C.I. Lower	.95 C.I. Upper		Male	Female
CCAT	154.37	150.88	157.86	163.19	169.33	158.08
CTBS:RC	39.50	37.80	41.20	39.96*	41.37	38.73*
CTBS:M	26.80	25.60	28.00	28.13	30.50	26.07*
CTBS:WE	34.00	32.56	35.44	34.96*	35.24*	34.71*
PHSCS	49.67	41.14	58.20	56.66*	57.59*	55.88*

* means in the interval

¹ C.I. computed using statistics and standard errors reported in the test manuals.

4.4 Correlational Analysis

Correlational and partial correlational analysis were used to examine the mediating effect of cognitive ability on the relationships between criterion and predictor variables. The intercorrelation matrix of all criterion and predictor variables is presented in Tables 6 and 7 for male and female subsamples,

respectively.

Table 6

Variables Intercorrelation Matrix for Males

Vars.	RC	MA	WE	SC	GM	FA	MS	CA
RC	1.00							
M	.54*	1.00						
WE	.50*	.62*	1.00					
SC	.04	.06	.02	1.00				
GM	.11	.05	.07	-.05	1.00			
FA	.29	.04	-.02	.13	.23	1.00		
MS	-.07	.10	.14	-.01	.23	.09	1.00	
CA	.50*	.69*	.58*	-.01	.23	.02	.10	1.00

Note. RC = reading comprehension; MA = mathematics; WE = written expression; SC = self-concept; GM = geographic mobility; FA = father absence; MS = military status; CA = cognitive ability.

* $p < .001$ (two-tail, Bonferroni adjustment: $.05/28$; critical $r = .45$)

For the males, only 6 of the 28 bivariate correlations were statistically significant. The significant correlations are between achievement variables and cognitive ability. None of the environmental predictor variables had a significant relationship with an achievement variable. Correlations of self-concept, a criterion variable, with other variables were not significant as well.

For females, 6 of the 28 bivariate correlations were statistically significant. Again, these significant correlations are between achievement measures and cognitive ability. The predictor variables do not have a significant correlation with any other variable.

Table 7

Variables Intercorrelation Matrix for Females

Vars.	RC	MA	WE	SC	GM	FA	MS	CA
RC	1.00							
M	.66*	1.00						
WE	.68*	.71*	1.00					
SC	.05	.04	.00	1.00				
GM	-.09	-.06	.12	.00	1.00			
FA	.29	.23	.20	.12	.18	1.00		
MS	.07	.08	-.10	.26	.07	.11	1.00	
CA	.74*	.77*	.80*	.10	-.07	.19	.04	1.00

Note. RC = reading comprehension; MA = mathematics; WE = written expression; SC = self-concept; GM = geographic mobility; FA = father absence; MS = military status; CA = cognitive ability.

* $p < .001$ (two-tail, Bonferroni adjustment: $.05/28$; critical $r = .41$)

Cognitive ability was considered a possible mediating variable in the relationships between the other variables. Therefore, the correlations between the variables were further examined with the influence of cognitive ability controlled. This was done through computing first order partial correlations with cognitive ability held constant. The results are reported in tables 8 and 9 for males and females, respectively.

For males, a number of correlations changed when the effect of cognitive ability was partialled out. The partial intercorrelations between the achievement

measures dropped and none were significant at alpha equal to .002 (Bonferroni adjustment: .05/21; critical $r=.43$)

Table 8

Partial Intercorrelations for Males

Vars.	RC	MA	WE	SC	GM	FA	MS
RC	1.00						
MA	.31	1.00					
WE	.30	.38	1.00				
SC	.05	.08	.15	1.00			
GM	-.19	-.10	-.09	-.05	1.00		
FA	.32	.04	.04	-.12	.22	1.00	
MS	.14	.05	-.10	-.01	.08	.08	1.00

Note. RC = reading comprehension; MA = mathematics; WE = written expression; SC = self-concept; GM = geographic mobility; FA = father absence; MS = military status.

For the females, upon partialling out the effect of cognitive ability the correlations between the achievement measures dropped considerably, to the point at which they were no longer statistically significant, $p > .002$ (Bonferroni adjustment: .05/21; critical $r=.4$). The correlation between military status and self-concept did not change, but it was not statistically significant. The correlation between geographic mobility and written expression of girls increased, but it too was not statistically significant.

Table 9

Partial Intercorrelations for Females

Vars.	RC	MA	WE	SC	GM	FA	MS
RC	1.00						
MA	.20	1.00					
WE	.20	.24	1.00				
SC	.03	.06	-.14	1.00			
GM	-.05	-.02	.27	.11	1.00		
FA	.22	-.12	.09	.01	.19	1.00	
MS	.07	-.07	-.21	.26	.10	.07	1.00

Note. RC = reading comprehension; MA = mathematics; WE = written expression; SC = self-concept; GM = geographic mobility; FA = father absence; MS = military status.

4.5 Regression Analysis

The multiple regression procedure was used to examine the explanatory power of the environmental variables: geographic mobility, father absence, and military status, in relation to scores for reading comprehension, mathematics, written expression, and self-concept. Regression models were fitted for each of the criterion variables, separately for the two gender subsamples. As there were four regressions for each gender group, the statistical significance of the regression models were evaluated at alpha level .0125 (Bonferroni adjustment: .05/4) to guard against experiment-wise error. The variables were entered in

forward stepwise manner. None of the regression models was statistically significant.

4.6 Summary

Chapter four presented the analyses and results of the study relating to the research questions.

Self-concept and written expression were found to be within the norming sample's confidence intervals. For reading comprehension and mathematics, only the males did not fall within the confidence limits of the norming sample. The research sample had higher means on cognitive ability than the norming sample.

Correlations between criterion variables were significant. However, none of the correlations between the environmental variables (father absence, military status, and geographic mobility) and the criterion variables (reading comprehension, mathematics, written expression, self-concept) was statistically significant. As well, none of the multiple regression models was statistically significant.

CHAPTER 5

DISCUSSION AND RECOMMENDATIONS

This chapter discusses the findings of the study, describes its limitations, and offers recommendations.

5.1 Findings and Conclusions

5.1.1 *Findings*

The conceptual framework based on school performance suggested that the environmental background of students could be a major predictor of their school performance. Previous literature concerning school performance of military children is either inconsistent or nonexistent. In order to determine whether or not the military milieu is related to educational attainment, the present study identified three environmental factors (geographic mobility, father absence due to assignment and military status) which may be related to reading comprehension, mathematics, written expression and self-concept of military adolescents.

It has been stated that military children, whose fathers are absent due to assignment, often have problems in school (Margiotta, 1978; Rosenfeld, Rosenstein & Raab, 1973; Yeatman, 1981). Staresnick (1985) suggested that the effects of family separation due to military assignment may be as related as, if not more related, than that of geographic mobility. However, in the present study, father absence was not found to be significantly related to any of the three school performance variables nor to children's self-concept. Father absence has been found to have a stronger relationship with school performance for boys than for girls (Cortner, 1966; Lynn & Sawrey, 1959). This too is not supported by the findings in the present investigation.

The results tend to support the notion that geographic mobility is of no dramatic consequence for the school performance of military students (Brantley, 1981; Ford, 1979; Smith, 1975; Stanley, 1983). Possibly, mobility allows for a broader and more flexible perception of life. This may increase students' ability to be creative and proficient in school. The non significant findings in the present study cast doubt on research that states that geographic mobility is a major problem in the life of the military student (Cope, 1984; Landman, 1980; Morin, 1986; Shaw, 1979).

Clearly, a mobile population puts greater demands in terms of effort and work load upon teachers and administrators. It seems, on the whole, educators working with military students seem to have been able to assist them in their adjustments to the many schools they have attended.

Current knowledge suggests that socioeconomic status is linked with academic achievement (Landman, 1980; Oldaker, 1970). However, findings in this study pertaining to the relationship between military status and school performance do not coincide with that conclusion. The finding in the present study is consistent with that of Smith (1975) who found no relationship between self-concept and father's military status in Europe.

Researchers have concluded that female school performance is more predictable than male school performance (Grady, 1966; O'Connell, 1981). Although intercorrelations were not significant in the present study, the relationships between the achievement variables and cognitive ability were somewhat weaker for males than for females. Upon partialling out the effect of cognitive ability, the correlations between the achievement measures for both genders dropped considerably. As long as cognitive ability remains, the current study appears to support previous findings of Grady (1966) and O'Connell (1981), but when

cognitive ability is partialled out, it appears to be the males whose performance is more predictable.

In addition, the study sought to determine whether the Canadian military adolescent sample was similar to the samples employed in the standardization of the instruments used in this study. The results show that there is no significant difference between the self-concept and written expression of military grade ten students and the norming samples for each of the published tests. This is similar to the findings of Hand (1969) and Strickland (1971), and disagrees with research that showed that military and nonmilitary students are similar in self-concept (Smith, 1975). However, for males only, reading comprehension and mathematics means do not fall within the confidence limits of the norming sample. This tends to agree with researchers who state there is a significant difference in school performance between American military and nonmilitary students (Gibson, 1968). It may be that living within the military milieu may have certain advantages for an adolescent male.

The research sample (both males and females) was outside the confidence interval of the norms for cognitive ability. The research sample means were beyond the upper limit, indicating that the research sample scored higher than would be expected. It could be that higher cognitive ability of the research sample mediates between the relationship of environmental variables and academic performance. Perhaps better ability made the subjects cope with whatever negative effects geographic mobility and father absence might have had on their school performance and self-concept. In fact, the correlations did improve when cognitive ability was partialled out, but none were significant, rendering this interpretation only a speculation.

5.1.2 Conclusions

Since the sample was drawn from a military population, conclusions should not be generalized to the civilian tenth grade population of Canada. Recognizing that the military population is unique, the following interpretations are drawn from the findings.

Findings on geographic mobility were somewhat surprising. Lack of significant differences found in the data analyses seem to indicate that geographic mobility, as defined in this investigation, does not relate to school performance. Consequently, claims that geographic mobility negatively influences the adolescent may be exaggerated. Military students, having been exposed by virtue of their mobility, experience a great variety of environmental situations. They may also come to experience geographic mobility as simply a part of their normal family life, learning to overcome and cope with any negative influences resulting from many moves by the time they reach the tenth grade (Grishaver & Raskin, 1974; Segal, 1986). In general, military students should be treated as individuals whose background happens to include geographic mobility. To relieve any initial trauma, short-term efforts to facilitate orientation and adjustment to new educational programs and friendships would seem appropriate.

The mean scores for the total military group were not significantly different from the published norms on written expression and self-concept. When stratified by gender, it was discovered that the males did not fall within the confidence limits of the norming sample in reading comprehension and mathematics. Further, grade ten military children seem to be higher in cognitive ability than their non-military peers. Based on these findings educators need to be aware of the academic potential of the military student and take this into account when planning programs and courses for these students.

5.2 Limitations of the Study

The present study has the following perceived limitations:

1) The examination of the relationship between military environmental factors and the academic achievement and self-concept of military dependants was limited to four major areas: reading comprehension, mathematics, written expression, and self-concept. Other predictors, such as teacher and school factors, were not investigated in this study.

2) Although all tests were requested to be conducted on similar days and hours, this study involved the testing at seven military bases in four Canadian provinces and two countries. The testing may have suffered from a lack of uniformity. However, no irregularities were reported or found. Furthermore, information obtained from parents, students, and student school records may be less than accurate, but no irregularities were noticed.

3) Although all Canadian Department of National Defence secondary schools had given their consent to the study, two schools in Europe were unable to conduct the testing. This eliminated approximately 50 potential students. However, as the military is regularly transferring families, without family consultation, to different bases in Canada and Europe, the study sample could only be assumed to be a good reflection of adolescents in military families.

4) The measurement of predictor variables (geographic mobility, father absence due to assignment, military status) may be limited and in need of further study and refinement.

5.3 Recommendations

Based upon the findings of the study, the following recommendations for research, policy, and education relating to the school performance of Canadian military dependants are suggested. The data did lead to some interesting speculations and provided some insights into subculture differences and direction for further investigations.

Attempts have been made to determine whether or not the "military life syndrome" does in fact exist. It is clear from the literature that military members and their families are a group isolated from the mainstream of Canadian civilian society. How the possible effects of such a life, if any, can be effectively measured is an important topic for further investigation.

What this study did reveal through the review of the literature and its own data analysis is a need for further study and research to contribute to the knowledge and understanding of the relationship of the military subculture to school performance. The emphasis should be on identifying predictor variables within the environment which would account for additional variation in school performance. Researchers may also wish to determine whether or not relationships exist between the military environment and other school subjects such as history and geography (Schofer, 1973). As well, it seems desirable to break such large categories as reading comprehension, mathematics, written expression and self-concept down into a number of skills and subskills so as to help the researcher to make comparisons and generalizations pertaining to this unique population. Moreover, skill level data would have clearer implications for modifying instructional practices.

As this study utilized only adolescents, replication of this investigation is needed to evaluate the relationship between school performance and the military environment at lower developmental stages or ages. It may be that younger children are more vulnerable to the upsets of military life. In addition, further study of military adolescents, with a larger sample size, might be useful. The author regards the geographic mobility and father absence variables as important elements in future research in this area.

The present study points to the need to inform administrators, teachers and parents of military students that there appears to be no significant relationship between geographic mobility and school achievement in mathematics, reading and written comprehension. Geographic mobility should not be made a scapegoat for student failures (Misner, 1973). However, this does not alter the fact that entering a new school is a difficult experience for many students, and every effort should continue to make the transition period as pleasant as possible.

Both teachers and parents should be informed of the research findings on the relationship between geographical mobility and school achievement. If parents and teachers are aware that geographic mobility appears unrelated to school achievement, time could be spent on the advantages of a move rather than being concerned with a problem which very well may not exist.

Also, the number of siblings in the family may be statistically controlled to determine if the availability of ready-made peers mitigates some or all of the possible negative effects of geographic mobility on the student.

A study is needed of how students adjust to the absence of a military father at different ages and at different stages of their development. The effects of adjusting to the strains of numerous separations and reunions should be

studied. Father absence is a highly complex variable whose impact must be carefully examined.

Knowledge about the education of military students is essential to challenge, confirm, or alter existing military regulations, policies, practices, and programming on behalf of military school-age dependants. Close communication between parents, students and school personnel is needed to enable educators to understand and help military children cope with their advantages and disadvantages. It would be useful to study the effectiveness of school programs designed to help military children, especially in the counselling area.

Knowledge of this study may make the service career more attractive to young men and women (recruitment) and assist in the area of retention. The relationship between family concerns and retention of military personnel has been an issue (Lamerson & Catano, 1987).

A longitudinal study of the achievement of former students of Canadian Department of National Defence Schools after graduation from high school is needed. Such a study would assist those with the responsibility for the education of dependent children in determining if they have been successful in their endeavours.

5.4 Summary

In sum, the three Canadian military environmental factors investigated in this study were not found to be related to the school performance (reading comprehension, mathematics, written expression, self-concept) of military adolescents. Educationally, the present system appears to sufficiently overcome any negative consequences of geographic mobility, father absence due to

assignment and father's military status. Perhaps the students' better cognitive ability helps them to cope with the upsets of military life.

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APPENDIX C - LETTERS TO TESTERS

Examiner Responsibilities Military Research Study

1. It is important that each examiner follows the same procedures. Please read each Manual carefully before administering the tests.
2. A participating student is one who is presently registered in the tenth grade and who's father has been in the military since the student's birth.
3. Testing may be performed, after all parental consent forms are returned to the school office, at your and the school's convenience. Please complete all testing during the month of April, 1987, within three consecutive days, preferably Tuesday, Wednesday and Thursday. Please test between 9:00 and 10:30 a.m.
4. It is important that the students be informed by the examiner prior to testing that participation is voluntary and will not affect his/her report card or standing in class. Please read the Request for Subject Participation previous to the first testing session. If a student becomes upset during testing, you may terminate that student's test.
5. Testing during Session 1 included the student information survey, the Verbal and Quantitative subtests of the Canadian Cognitive Abilities Test. Session 2 begins with the Nonverbal Battery of the Canadian Cognitive Abilities Test, followed by the Written Expression subtest of the Canadian Tests of Basic Skills, and The Way I Feel About Myself (Piers-Harris Children's Self-Concept Scale). Session 3 concludes the testing with the Reading Comprehension and Mathematics subtests of the Canadian Tests of Basic Skills. A five minute recess between the administration of tests within each session should take place.
6. Inquire of the principal what s/he wishes the nonparticipating students to pursue during the three testing sessions.
7. Please have participating students complete all information on the front of each protocol.
8. There are extra protocols in each envelope. These are available in the event of a mistake.
9. If any student appears to have problems which you feel might alter the score(s), please state the student's name and situation.
10. All test materials should be returned to the researcher by the end of April, 1987.
11. After testing, please thank the students, on my behalf.

Testing Materials

Military Research Study

Each Student

1. sharpened pencil with eraser
2. scratch paper

Student Information Survey

1. To be answered prior to Session I tests

Canadian Cognitive Abilities Test

1. Test booklet, Multilevel Edition, Levels A-H, Form 3.
2. Answer sheet for Level G.

Canadian Tests of Basic Skills

1. Test booklet, High School Multilevel Edition, Levels 15-18, Form 5.
2. Answer sheet for Level 16

The Way I Feel About Myself (Piers-Harris Children's Self-Concept Scale)

1. Test booklet (to be written upon).

APPENDIX D - PARENT INFORMATION/CONSENT SURVEY

Box 972
W.H. Gage
5959 Student Union Mall
Vancouver, British Columbia
V6T 1K2
2 March 30, 1987

Dear Parents/Guardians,

As a member of a military family, your child is repeatedly exposed to new experiences to which s/he must adapt. The relationship of this unique lifestyle to academic achievement and self-concept has been little researched. Like all educational systems, the Canadian military is interested and concerned in the quality of its educational programs, and attempts to continuously improve them.

This research project is being undertaken as a doctoral dissertation in the Department of Educational Psychology and Special Education at the University of British Columbia. Permission to conduct this study has been granted by Mr. Bussiere, Director General, Dependants Education Programs, Department of National Defence; the Base Commander, Board of Education, as well as the principal of your child's secondary school, _____.

The project requests the cooperation of all grade ten students attending DND schools in Canada and Europe. Your child in grade ten is a possible participant of this research. For the study to be meaningful, it is very important that each of the students be allowed to participate. If you and your child agree to participate, s/he will be asked to take part in three group testing sessions of approximately one hour and ten minutes on three consecutive days. The testing will be done during school hours by a qualified educator and at the convenience of the teacher(s) and school during the month of April. This type of testing is common practice in schools and is usually experienced as interesting and enjoyable by the students involved. All tests are school tests used in Canadian schools. The results of the tests will be strictly confidential. All identifying marks will be removed and future identification of individuals will not be possible. Tests will be returned to the University of British Columbia for coding and analysis. The purpose is not to check any one child's performance, but to obtain data on a large group of grade ten military students. No individual scores will be identified in the research paper.

As well, your child's school records are needed for information on the number and location of schools previously attended. If I may use this information, please indicate immediately following the parent consent form.

Research results will provide useful information to all professionals and the military involved in the education of military dependants. I am asking for your cooperation in expanding our understanding of the relationship of military life on the academic achievement and self-concept of military students.

Attached is a permission slip for you to sign which allows the administration of these school tests to your child. An information survey is also attached for you, the parents, to complete and return to your child's school.

Parental Permission Form

Military Research Study

Code Number:_____.

1. Name of student: _____.

2. Date: _____.

3. Name of school: _____.

I agree to allow my child to participate in the military research study. I am aware that this will involve three group testing sessions of approximately one hour each, conducted on separate days. I understand that confidentiality of test results will be maintained and that no individual scores will be released. Only group results will be reported. School records will be used only for information regarding the schools my child has attended. I also understand that participation in this project is voluntary and may be terminated at any time.

Signature of Parent/Guardian

My child's records may ___/may not ___be used by the secretary to obtain information regarding the schools attended by my child.

If you have given your consent, your assistance in providing information to the questions on the following pages, would be very helpful in making this a meaningful study.

I do not wish my child to participate in the military research study.

Signature of Parent/Guardian

Please return the completed Parent Consent Form, whether you have given or denied consent, with your child to the school office.

Thank you very much.

Parental Information Survey

Military Research Study

Code Number:_____.

PLEASE PRINT

Name of tenth grade child: (first)_____. (surname)_____.

Your assistance in providing the following information would be greatly appreciated. If possible, we request that the mother of the participating subject answer the questions, in consultation with the father. Answer to the best of your ability.

Return the completed Parental Information Survey, in the envelope provided, to the school office. Please seal the envelope to ensure confidentiality.

1. Military personnel's rank:

(If both parents in the service, state both ranks please)

Father:_____.

Mother:_____.

2. Years of active service: (where applicable)

Father:_____.

Mother:_____.

3. Were you a military child? (please check)

Father: Yes____. No____.

Mother: Yes____. No____.

4. Geographic mobility:

Please state each time you moved residence since the participating child was born until first registered in school, including the age of the child at each move.

Place of birth: Location _____ Province _____.

- a. Date (month/year): _____.
Location: City/base _____ Province _____ Country _____
Age at move: _____.
- b. Date (month/year): _____.
Location: City/base _____ Province _____ Country _____
Age at move: _____.
- c. Date (month/year): _____.
Location: City/base _____ Province _____ Country _____
Age at move: _____.
- d. Date (month/year): _____.
Location: City/base _____ Province _____ Country _____
Age at move: _____.
- e. Date (month/year): _____.
Location: City/base _____ Province _____ Country _____
Age at move: _____.
- f. Date (month/year): _____.
Location: City/base _____ Province _____ Country _____
Age at move: _____.
- g. Date (month/year): _____.
Location: City/base _____ Province _____ Country _____
Age at move: _____.

Age at move: _____.

h. Date (month/year): _____.

Location: City/base _____ Province _____ Country
_____.

Age at move: _____.

Comments (if any)

_____.

5. Father absence due to military assignment:

During the years since the birth of the above names child, please state the times the military member was absent from the home in line of duty (to the best of your ability).

a. Date left (month/year): _____.

Date returned (month/year): _____.

Destination: city/base _____ Province _____ Country
_____.

Assignment: _____.

b. Date left (month/year): _____.

Date returned (month/year): _____.

Destination: city/base _____ Province _____ Country
_____.

Assignment: _____.

c. Date left (month/year): _____.

Date returned (month/year): _____.

Destination: city/base _____ Province _____ Country

- _____.
- Assignment: _____.
- d. Date left (month/year): _____.
- Date returned (month/year): _____.
- Destination: city/base _____, Province _____, Country _____.
- Assignment: _____.
- e. Date left (month/year): _____.
- Date returned (month/year): _____.
- Destination: city/base _____, Province _____, Country _____.
- Assignment: _____.
- f. Date left (month/year): _____.
- Date returned (month/year): _____.
- Destination: city/base _____, Province _____, Country _____.
- Assignment: _____.
- g. Date left (month/year): _____.
- Date returned (month/year): _____.
- Destination: city/base _____, Province _____, Country _____.
- Assignment: _____.
- h. Date left (month/year): _____.
- Date returned (month/year): _____.
- Destination: city/base _____, Province _____, Country _____.
- Assignment: _____.

- i. Date left (month/year): _____.
Date returned (month/year): _____.
Destination: city/base _____, Province _____, Country _____.
Assignment: _____.
- j. Date left (month/year): _____.
Date returned (month/year): _____.
Destination: city/base _____, Province _____, Country _____.
Assignment: _____.
- k. Date left (month/year): _____.
Date returned (month/year): _____.
Destination: city/base _____, Province _____, Country _____.
Assignment: _____.

Comments (if any) _____.

Thank you very much.

APPENDIX E - STUDENT INFORMATION SURVEY

STUDENT INFORMATION SURVEY Military Research Study Code

Number:_____.

1. Name: (first)_____. (last) _____.

2. Age: _____.(years)

3. Gender (please check) _____Male _____Female.

4. Name of School: _____.

5. Geographic Mobility: Please state, to the best of your ability, the following information about each school you have been registered in, beginning with your primary education (i.e. kindergarten).

a. Name of School _____.

Location: city/base _____Province_____Country _____.

Date:(month/year) entry_____. exit_____.

Grade: entry_____. exit_____.

b. Name of School _____.

Location: city/base _____Province_____Country _____.

Date:(month/year) entry_____. exit_____.

Grade: entry_____. exit_____.

c. Name of School _____.

Location: city/base _____Province_____Country _____.

Date:(month/year) entry_____. exit_____.

Grade: entry_____. exit_____.

d. Name of School _____.

Location: city/base _____Province_____Country _____.

Date:(month/year) entry_____. exit_____.

Grade: entry_____. exit_____.

e. Name of School _____.

Location: city/base _____Province_____Country _____.

Date:(month/year) entry_____. exit_____.

Grade: entry_____. exit_____.

f. Name of School _____.

Location: city/base _____Province_____Country _____.

Date:(month/year) entry_____. exit_____.

Grade: entry_____. exit_____.

g. Name of School _____.

Location: city/base _____Province_____Country _____.

Date:(month/year) entry_____. exit_____.

Grade: entry_____. exit_____.

h. Name of School _____.

Location: city/base _____Province_____Country _____.

Date:(month/year) entry_____. exit_____.

Grade: entry_____. exit_____.

- i. Name of School _____.
Location: city/base _____ Province _____ Country _____.
Date:(month/year) entry_____. exit_____.
Grade: entry_____. exit_____.
- j. Name of School _____.
Location: city/base _____ Province _____ Country _____.
Date:(month/year) entry_____. exit_____.
Grade: entry_____. exit_____.
- k. Name of School _____.
Location: city/base _____ Province _____ Country _____.
Date:(month/year) entry_____. exit_____.
Grade: entry_____. exit_____.
- l. Name of School _____.
Location: city/base _____ Province _____ Country _____.
Date:(month/year) entry_____. exit_____.
Grade: entry_____. exit_____.
- m. Name of School _____.
Location: city/base _____ Province _____ Country _____.
Date:(month/year) entry_____. exit_____.
Grade: entry_____. exit_____.

APPENDIX F - STUDENT RECORDS

STUDENT INFORMATION SURVEY

Military Research Study Code Number:_____.

1. Name: (first)_____. (last) _____.
2. School: _____.
3. Location: city/base _____Province_____Country _____.
4. Please state the dates ,school, location and grade at entry and exit of the above named child from his/her school records, beginning with kindergarten.
 - a. Name of School _____.
Location: city/base _____Province_____Country _____.
Date:(month/year) entry_____. exit_____.
Grade: entry_____. exit_____.
 - b. Name of School _____.
Location: city/base _____Province_____Country _____.
Date:(month/year) entry_____. exit_____.
Grade: entry_____. exit_____.
 - c. Name of School _____.
Location: city/base _____Province_____Country _____.
Date:(month/year) entry_____. exit_____.
Grade: entry_____. exit_____.

- d. Name of School _____.
Location: city/base _____ Province _____ Country _____.
Date:(month/year) entry_____. exit_____.
Grade: entry_____. exit_____.
- e. Name of School _____.
Location: city/base _____ Province _____ Country _____.
Date:(month/year) entry_____. exit_____.
Grade: entry_____. exit_____.
- f. Name of School _____.
Location: city/base _____ Province _____ Country _____.
Date:(month/year) entry_____. exit_____.
Grade: entry_____. exit_____.
- g. Name of School _____.
Location: city/base _____ Province _____ Country _____.
Date:(month/year) entry_____. exit_____.
Grade: entry_____. exit_____.
- h. Name of School _____.
Location: city/base _____ Province _____ Country _____.
Date:(month/year) entry_____. exit_____.
Grade: entry_____. exit_____.
- i. Name of School _____.
Location: city/base _____ Province _____ Country _____.

Date:(month/year) entry_____. exit_____.

Grade: entry_____. exit_____.

j. Name of School _____.

Location: city/base _____Province_____Country _____.

Date:(month/year) entry_____. exit_____.

Grade: entry_____. exit_____.

k. Name of School _____.

Location: city/base _____Province_____Country _____.

Date:(month/year) entry_____. exit_____.

Grade: entry_____. exit_____.

l. Name of School _____.

Location: city/base _____Province_____Country _____.

Date:(month/year) entry_____. exit_____.

Grade: entry_____. exit_____.

m. Name of School _____.

Location: city/base _____Province_____Country _____.

Date:(month/year) entry_____. exit_____.

Grade: entry_____. exit_____.

APPENDIX G - INFORMAL INTERVIEWS

Military Research Study

Name: _____.

Position: _____.

1. In your opinion, what effect has military life had upon your child?
2. In your opinion, what effect has military life had upon your child's academic achievement?
3. In your opinion, what effect has military life had upon your child's self concept?
4. In your opinion, what have been the greatest stresses of military life upon your child?
5. In your opinion, how do military children cope with these stresses?