A COMPARISON OF PERSONALITY TRAITS BETWEEN COLLEGE STUDENTS REARED WITHIN A SELECTED POLAR REGION BY NON-NATIVE PARENTS AND COLLEGE STUDENTS REARED WITHIN NON-POLAR REGIONS BY NATIVE PARENTS

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The problem with which this study is concerned is that of determining if climatic circumstances significantly affect personality development.

The purposes of this study are threefold. The first is to determine if significant differences in personality traits exist between college students reared within polar regions by parents reared within non-polar regions, as compared to college students reared within non-polar regions by parents who were reared within non-polar regions. The second purpose of this study is to identify the area or areas in which personality traits differ among these individuals. The third purpose is to report these differences and their significance to society and our educational system.

The method employed to determine the effect of climatic circumstances on personality development is threefold. The first is to select 30 males and 30 females from two different geographic

locations, each of which enjoys totally different climatic circumstances within the physical environment. The second is to divide the 30 males and 30 females comprising each group into cells of 15 males with siblings, 15 males without siblings, 15 females with siblings, and 15 females without siblings. The third is to administer the Guilford Zimmerman Temperament Survey to each of the 120 subjects comprising both groups.

The hypotheses formulated to carry out the purposes of this study state that significant differences between the mean scores on each of the ten scales of the Guilford Zimmerman Temperament Survey will exist between the respective groups.

Based on the research findings and conclusion of this study, which suggest that females born and reared within polar regions without siblings display social withdrawal to a greater degree than do their counterparts in the more temperate locations of this society, the following recommendations are made:

1. An extensive longitudinal study designed to assess fully the effects of polar region circumstances on children's intellectual abilities, their attitudes toward school, their parents, and if present, their siblings.

2. An extensive longitudinal study designed to assess fully parental attitudes pertaining to child rearing practices, especially

female children following relocation into polar regions.

3. Community participation toward the development of day care centers for all children under the age of six years.

4. Development and implementation of programs within the existing educational facilities in polar regions to provide extensive opportunity for maximum social contact.

5. Funded programs designed in such a manner as to provide knowledge to parents in regard to the possible long-term effects on their children's personality development possibly resulting from being restricted to the home environment predominantly during the winter months in polar regions.

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CHAPTER I

INTRODUCTION

Prior to exploration of polar regions, little was known in regard to the effects of isolation on human behavior. However, reports from autobiographical writings (5) and from military personnel stationed within the antarctic and arctic regions suggested that profound changes in human behavior occur during the long polar winter (7, 9, 17, 22). These observable behavioral changes represent the neuroses in varying degrees of severity and initially manifest in increased anxiety and depression (17), followed by increased irritability, restlessness, sensitivity to sound, intellectual inertia, impaired memory and concentration, and hallucinations of varying degrees (17, 22).

In addition to psychological changes, accompanying being located within these regions during the winter months, studies have revealed that a variety of physiological complaints also occur (17) which, like the psychological phenomena observed, persist throughout the polar winter and only begin to diminish with the coming of spring and the sun (9).

Heron (13) relates that the pioneering work of Donald O. Hebb in 1951 resulted in the first successful experimental approximation of the real isolated circumstances which exist in polar regions. This successful experimental approach resulted from Hebb's original conclusion that within both the real and simulated situations involving isolation one common factor could be isolated from both circumstances. This factor was the "sameness of life" hypothesis within both situations, which provided the impetus for developing and experimental monotonous environment.

Hebb initially reported that following exposure to an experimental monotonous environment, his subjects experienced identical behavioral phenomena as those phenomena experienced within the actual isolated situation. These behavioral phenomena initially manifested in anxiety and depression followed by irritability, restlessness, inability to concentrate, impaired memory, and visual hallucinations. Lilly (15), Lilly and Shurley (16), and Zubek, Sanson and Prysiazniuk (28) also have reported similar phenomena in their subjects following experimental isolation. Zubek, Sanson and Prysiazniuk further relate that the effects of isolation on human behavior apparently affect significantly more behavioral phenomena in the female than within the male.

Until recently there existed no real need to pursue the effects of isolation on human behavior, other than to fully assess its effects on military personnel stationed within polar regions. However, due to increasing needs for future fuel, food and land availability within this society, the geographic areas within the arctic polar regions are being populated by individuals and families who are relocating from the more temperate geographic locations of this society.

The literature concerned with military personnel and the behavioral phenomena which accompany being relocated into polar regions clearly reflects that profound changes primarily manifest during the long winter months when an individual is deprived of his usual amount of activities. Therefore, there is every reason to suppose that the behavioral effects resulting from deprivation of normal experiences, as observed within military personnel within these regions, may also generalize to the family structure.

From the perspective of personality development, this possibility may have a tremendous impact on children within these regions, reared by parents who may display inconsistent behaviors throughout a significant portion of each year, following relocation into polar regions, from the more temperate geographic locations of this society. Bandura (1) and Bandura, Ross and Ross (2) state

that consistent behaviors must be displayed by parents early in the child's developmental process. They further state that deviations from otherwise normal parental behaviors may have lasting adverse effects on every segment of a child's personality. Other studies also reflect this orientation throughout their general reported findings (3, 4, 6, 10, 11, 27).

Bandura, and Bandura, Ross and Ross also related that a child acquires the greatest portion of his behavior directly through the process of imitating and modeling parental behaviors. They further relate that inconsistent or abnormal parental behaviors represent faulty models and may be responsible for the tendency for mental illnesses to run in families and for the acquisition of maladaptive behavior which is in direct contrast to the goal of education within this society.

There exists the general consensus that early learned behaviors may persist throughout childhood, and may be responsible for much behavior at the adult levels (1, 2, 6, 8, 10, 11, 14, 21). Therefore, as personality is believed to be firmly established at the young adult level (26, p. 176), it should be possible to ascertain if significant differences at the adult level exist between those individuals reared within polar regions as opposed to those who were reared throughout other geographic locations of this society.

Statement of the Problem

The problem with which this study was concerned was that of determining of climatic circumstances significantly affect personality development.

Purpose of the Study

In order to clarify the problem with which this study was concerned, the following specific purposes were presented:

1. To determine if significant differences in personality traits exist between college students reared within polar regions by parents who were reared within non-polar regions, as compared to college students reared within non-polar regions by parents who were reared within non-polar regions.

2. To identify the area or areas in which personality traits differ among these individuals.

3. To report these differences, and their significance to society and our educational system.

Hypotheses

In order to carry out the purposes of this study, the following hypotheses were formulated:

1. The mean score of non-polar regions' subjects (further referred to as Group A) will differ significantly on the General

Activity Scale of the Guilford Zimmerman Temperament Survey from the mean scores of the polar region subjects (further referred to as Group B).

2. The mean score of Group A will differ significantly on the Restraint Scale of the Guilford Zimmerman Temperament Survey from the mean scores of Group B.

3. The mean score of Group A will differ significantly on the Ascendance Scale of the Guilford Zimmerman Temperament Survey from the mean scores of Group B.

4. The mean score of Group A will differ significantly on the Sociability Scale of the Guilford Zimmerman Temperament Survey from the mean scores of Group B.

5. The mean score of Group A will differ significantly on the Emotional Stability Scale of the Guilford Zimmerman Temperament Survey from the mean scores of Group B.

6. The mean score of Group A will differ significantly on the Objectivity Scale of the Guilford Zimmerman Temperament Survey from the mean scores of Group B.

7. The mean score of Group A will differ significantly on the Friendliness Scale of the Guilford Zimmerman Temperament Survey from the mean scores of Group B.

8. The mean score of Group A will differ significantly on the Thoughtfulness Scale of the Guilford Zimmerman Temperament Survey from the mean scores of Group B.

9. The mean score of Group A will differ significantly on the Personal Relations Scale of the Guilford Zimmerman Temperament Survey from the mean scores of Group B.

10. The mean score of Group A will differ significantly on the Masculinity Scale of the Guilford Zimmerman Temperament Survey from the mean scores of Group B.

Background of the Study

A number of studies have concerned themselves with the effects of isolation on the human infant. However, as isolation during infancy may lead to permanent damage, there can be no experimental isolation among human infants (24). The result of this orientation necessitates that inferences be drawn regarding the effects of isolation from both infrahuman studies and studies involving isolation among institutionalized children. Harlow and Zimmerman (12) have demonstrated that there exists a need for normal maternal experiences within the infant rhesus monkey. The effects of maternal deprivation on this particular species result in both abnormal physiological and psychological development.

Harlow and Zimmerman emphasize the need for early tactile contact continued throughout the developmental period. Deprivation of this contact early in infancy apparently is responsible for the infant monkey not learning the appropriate sex role and general social behaviors necessary for adequate adjustment. They further relate that these debilitating aspects of behavior result in the inability to reproduce the species. When artificial methods for conception are utilized, the monkey mother, from the moment of her offspring's birth, tends to totally disregard its most basic needs.

Studies concerned with the effects of partial maternal deprivation among institutionalized children who are deprived of adequate maternal care relate that the result of this maternal deprivation within the human infant results in the infant being generally depressed, immobile for long periods of time, and fearful of adults (11). White and Castle (27) relate that maternal deprivation resulting from institutionalization may also foster permanent intellectual development. In addition, White and Castle relate that evidence derived from observations on institutionalized children strongly indicates that early sensory experience has significance for all subsequent sensory functioning and normal development.

Bowlby (4) and Rubenstein (23) agree with White and Castle. Goldfarb (11) also lends much support to these findings

and relates that the absence of adequate mothering definitely results in a basic deficit in total personality development, and that the neglected child can never become a well-adjusted adult.

Isolation at the adult level, thereby being deprived of one's normal experiences, induces many behavioral changes (5, 7, 9, 13, 15, 16, 17, 22, 28, 29). However, it does not determine all future behavior as within the human infant (4, 11, 23, 27). Studies involving isolation at the adult level within both the antarctic and arctic polar regions reveal that among military personnel stationed within these regions during the polar winter, observable behavioral changes occur which initially manifest in anxiety and depression, followed by irritability, restlessness, sensitivity, intellectual inertia, inability to concentrate, and hallucinations. Both the behavioral and physiological phenomena (17) which accompany military duty in these regions is believed attributable to the monotonous environment and forced close-group interaction during the winter months (7).

Heron (13) cites the pioneering work of Donald O. Hebb as being the first experimental approximation of isolation. This initial experimentation in determining the effects of isolation from an objective standpoint necessitated the approximation of a monotonous environment. To successfully duplicate a monotonous environment, Hebb hypothesized that the sameness of life within both

situations was the most salient factor of all. Initial findings substantiated the validity of this hypothesis, and Hebb reported that his subjects experienced identical phenomena as to those phenomena reportedly occurring in the real situation.

These initial observations related that in addition to identical phenomena resulting from experimental isolation, the hierarchical occurrence of these phenomena manifested in anxiety, depression, irritability, sensitivity, inability to concentrate, mental impairment, and visual hallucinations. Essentially, these patterns of occurrence are identical to those observed in the real situation involving isolation within polar regions. Lilly (15) and Lilly and Shurley (16) have reported behavioral phenomena similar to those reported by Hebb. In addition, Lilly (15) relates that when subjects are suspended in water tanks, the deprivation apparently induces the effects of isolation more rapidly than through utilizing Hebb's original isolation chamber.

Zubek, Sanson and Prysiazniuk (28) and Zuckerman, Persky, Link and Basu (29) agree that experimental isolation effects deleterious changes in human behavior, which parallel those behavioral phenomena reported throughout observations with military personnel in polar regions. Zubek, Sanson and Prysiazniuk further relate that dexterity is significantly impaired following isolation. In addition,

Zuckerman, Persky, Link and Basu have reported that isolation apparently is capable of producing generalized endocrine arousal in both sexes, and that females are affected significantly more than males in all behavioral areas.

An exhaustive search of the literature failed to reveal the effects upon the offspring of individuals isolated and deprived of normal experiences for long periods of time within polar regions. However, there is no reason to suppose that the needs of the human infant born to individuals deprived of a significant portion of normal experiences would be any different than those elsewhere.

Mussen, Conger and Kagan (19, p. 154) state that the newborn infant's primary needs, i.e., oxygen and elimination, are reduced automatically through innate mechanisms, and that more complex needs, consisting of hunger, thirst, alleviation of pain or cold, require another person for gratification. In addition to these primary needs, the need for tactile contact with the mother is seemingly of uppermost importance (4, 23).

Ribble (21) observed 600 infants over a long period of time and their interactions with the mother. Her conclusions were that tactile mother-infant contact was necessary for the infant's physiological development. She observed that infants denied tactile contact manifested persistent muscular tension, inadequate

breathing, and gastrointestinal disorders. These tensions disappeared when the infant was allowed to suck his mother's breast or was put into close contact with her body. She further asserts that women who are emotionally disturbed or who reject their children for various reasons do not provide adequate mothering for them, and the result of this deprivation manifests in negativism consisting of loss of appetite, hypertension and rigidity. The alternate reaction to maternal deprivation according to Ribble is regression which manifests in stuperous sleep, loss of muscle tone, irregular breathing, vomiting and diarrhea.

The importance of adequate and constant maternal care is further reflected by Mussen, Conger and Kagan (19). They relate that during the early developmental stages of infancy the child's personality development is contingent on adequate parental behaviors of which the child must model. Hurlock (14) lends much support to this hypothesis and relates that family circumstances are responsible for either adequate or inadequate personality development in the child. She concludes that "personality is formed from the interaction of significant figures (first the mother, later the father and siblings, later extra-familial figures) in his environment."

Other studies also reflect this orientation that early circumstances within the family are important factors in personality

development (3, 8, 10, 18, 25). Coleman (6, 7) also asserts that family behavior has a direct influence upon the child's personality development. He states that faulty parent-child relationships or pathogenic family interactions are a fertile source of maladjustment. Coleman further asserts that many types of child-rearing practices are utilized which may or may not detrimentally affect personality development. However, he states that several types are consistently found in the backgrounds of disturbed individuals. These include the following patterns pertaining to the child: rejection, over-protection, over-indulgence, perfectionistic demands, rigid, unrealistic moral demands, faulty discipline, sibling rivalry, faulty parental models, and marital discord and broken homes.

Bandura (1) and Bandura, Ross and Ross (2) further assert that the child's key models are his parents and that their behavior can have a highly beneficial or detrimental effect on the way a child learns to perceive, think, feel, and act. Bandura (1) further asserts that when parents themselves are emotionally disturbed or mentally ill, they provide faulty models for the child to follow. In summary, Bandura states that this is undoubtedly an important factor in the tendency for delinquency and crime as well as for mental illness to run in families.

Therefore, reflecting upon the previous literature, it is readily seen that both isolation within polar regions and experimental isolation are directly responsible for gross behavioral changes within the adult, manifesting in behaviors which represent the neuroses in varying degrees of severity (17). It is known that parental influences determine much of a child's early acquired behavior (6, 19, 20). It also is known that many early learned behaviors persist into early adulthood where personality is believed firmly established (26, p. 176). There is no reason to suppose that children born and reared within polar regions do not also model parental behavior, which as suggested by the literature, may undergo significant changes during the polar winter, thereby providing a faulty model from otherwise normal parental behavior.

Significance of the Study

The literature concerned with the effects of isolation on human behavior in both the real and experimental situation and the apparent necessity for adequate parental models and many other considerations establish the necessity of a study such as follows:

1. The finding of significant differences between group means on the postulated hypothesis would lend support to the proposition that geographic location, which encompasses prevailing

conditions within the physical environment, may be an important variable in personality development (8, 14, 23, 26).

2. Significant differences between group means on the postulated hypothesis would suggest that behavioral change during the polar winter is not limited to the adult male (6) but also affects behavioral change within the adult female within the family structure (29).

3. Significant findings on the postulated hypothesis would lend support to the theory that behavioral disturbances within parental models may foster inadequate personality development (1, 2).

4. Significant findings on the postulated hypothesis would point out the need for additional research, designed to determine if these differences are debilitating. If so, the necessity for compensating intervention on the part of society and education to devise means to alleviate the differences resulting from being reared within polar regions by non-native parents will clearly be established.

Definition of Terms

For the purpose of this study the following definitions were formulated:

Isolation from normal experiences:--refers to deprivation of those experiences to which the individual was previously accustomed.

Native Parents:--refers to both the adult male and female who were born and raised in the geographic locations of the continental United States.

Non-Native Parents:--refers to both the adult male and female who were born and raised in the geographic locations of the continental United States then relocated into polar regions.

Non-polar Regions:--refers to areas within the geographic boundaries of the continental United States, which, due to conditions within the physical environment, do not preclude the individual from engaging in accustomed activities for significant portions of each year.

Normal Parental Models:--refers to both the adult male and female within the family structure, both of whom must display socially adaptive behavior for the child to both imitate and model from infancy throughout the developmental process.

Polar Region:--refers to the most populated area of northern Alaska (Fairbanks), which, due to geographic location (147^{o} 48 min. West Longitude and 64^{o} 50 min. North Latitude), parallels climatic conditions during the polar winter as encountered within the Arctic Circle, i.e., the populated area of Fairbanks is subjected to both intense cold and sunlight deprivation during the polar winter.

Limitations of the Study

This study was limited to college students who were enrolled at both North Texas State University, Denton, Texas, and the University of Alaska, College, Alaska, during the fall semester, 1971. In addition, the following specific limitations were imposed on this study:

1. Subjects selected for this study were of Caucasian extraction. This limitation was imposed because of the lack of Negroes and Latin-American extractions living within polar regions. Those individuals of Eskimo, Aleut, and Indian extractions living within polar regions are subjected to totally different cultural and sociological factors; therefore, they were restricted from the study.

2. The measurement of personality traits was limited to those differentiated by the ten scales of the Guilford Zimmerman Temperament Survey.

3. As personality development is not believed firmly established until adulthood (26, p. 176), and as adulthood is an ambiguous term as applied to chronological age, subject age was restricted to eighteen through twenty-two years, which should be representative of the adult level.

Basic Assumptions

It was assumed that adult behavior is the result of the socialization process and that behaviors learned early in life determine much of the individual's behavior at the adult level.

In addition, the following specific assumptions were made:

1. That both the adult male and female, when relocating into polar regions from the continental United States, experience gross behavioral changes during the polar winter, which manifest in increased anxiety, depression, irritability, restlessness, inability to concentrate, and hallucinations of varying degrees.

2. That behavioral changes which occur during the polar winter are directly attributable to the isolated circumstance and deprivation from normal experiences within the adult.

3. That these behavioral changes at the adult level are temporary and occur only during the polar winter.

4. That the child both imitates and models parental behavior, regardless whether it is adaptive or maladaptive in nature.

5. That the acquisition of normal behavior, as it pertains to the infant upward throughout the developmental process leading to adulthood, is contingent upon the uniformity of normal behavior displayed by parents.

6. That faulty parental models, i.e., emotionally disturbed or mentally ill parents, may be an important factor in the acquisition of maladaptive behaviors as pertaining to every segment of the child's personality development.

7. That all subjects selected did respond honestly and accurately to both the selection procedure questionnaire and the personality instrument utilized.

Summary

In this chapter, the background for this study was briefly presented. In addition, a statement of the problem and the underlying purposes of the study were also presented. As an outgrowth of the literature concerned with the effects of isolation on human behavior in both the real and experimental situations, and the importance of adequate parental models, hypotheses were constructed including statements of the significance and limitations of the study. To clarify terminology not generally known, a definition of terms section has been included. Finally, the basic assumptions necessary to conduct a study of this nature have been outlined.

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CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter contains a brief history of the effects of isolation on human behavior, ranging from the effects of isolation within polar regions, to the effects of experimental isolation on the adult. It culminates with the needs of both the human and infrahuman infant, and the lasting behavioral effects if deprived of these needs.

One of the earliest documented instances of behavioral phenomena being attributed to circumstances within the physical environment is reflected throughout the autobiographical writings of Ritter (95), who during the long polar nights on the lonely arctic island of Spitzbergen, experienced anxiety, depression and many terrifying hallucinations. Byrd (18), also isolated and alone within the vastness of Antarctica, experienced identical phenomena, and, like Ritter, attributed their cause to a lack of change within the environment. Similar behavioral phenomena have been reported by persons isolated at sea (11, 108), during blizzards (58), and even more recently during space flight (33).

A lack of change in man's environment and the implications for abnormal mental functioning is further reflected through the autobiographical writings of prisoners of war. It has been reported that both the Russian and Chinese governments have utilized environmental manipulation in such a manner as to literally control human behavior (24, 59). The necessity for a continually changing environment is further reflected throughout the literature, where behavioral phenomena experienced by military personnel in polar regions represent the neuroses in varying degrees of severity.

Initial investigations among these personnel have revealed that in addition to increased anxiety and depression being experienced shortly after arrival into these regions the incidence of physiological changes consisting of disturbances in the diurnal rhythms of the body, gastro-intestinal complaints, headaches, and incidents of insomnia significantly increase during the winter months (80). More systematic investigations designed to fully assess the specific types of behavioral phenomena encountered within these regions (33, 79, 85, 96) provide evidence suggesting that all reported phenomena tended to follow a hierarchical pattern beginning with noticeable increases in both anxiety and depression (79).

Following these initial behavioral changes, an individual reportedly begins to experience increased sensitivity to the slightest

sound, intellectual inertia, impaired memory, concentration, and hallucinations of varying degrees (20, 79).

Attempts to ferret out the causes for these phenomena have been many, and the conclusions arrived at have generally been inconclusive. Roher (96) and Frisch (33) relate that all observable phenomena tend to diminish with the coming of spring and sunlight. Therefore, they have attributed these phenomena to the intense cold and darkness, which accompany the long, bitter polar winter. Initially Nardini, Herrmann and Rasmann (85), following investigations into the possibility of personality factors being responsible for the phenomena, observed reported findings which agreed with Roher and Frisch's conclusions.

It was further related that conditions consisting of intense cold and darkness within polar regions were not significantly related to the phenomena observed. Rather, these investigators (85) attribute the occurrence of these phenomena to the identical conditions previously proposed by Mullen (79). The original hypotheses proposed by Mullen explained that these phenomena resulted from the following factors: (1) absence of many accustomed sources of emotional gratification; (2) close group interaction; and (3) the relative sameness of the environment. Possenti (93) and Coleman (20) agree with these conclusions. In addition, Coleman further

relates that circumstances accompanying the polar winter represent a deprived state in man.

Aside from the specific factors responsible for these phenomena, Rohrer (97) states that military personnel in the Anarctic experience slightly more phenomena than those located in the arctic regions. Realizing that climatic conditions prevailing within both regions are essentially identical, Rohrer attributed these differences to the fact that duty within the antarctic affords little, if any, opportunity for escape during an emergency, whereas duty within the arctic at least affords the possibility for escape during an emergency.

Possenti (93) partially agrees with Rohrer's conclusion. However, he relates that just being within any one of these regions may not be the only determinant for the differences observed. In defense, Possenti relates that an individual experiences identical psychological effects from being isolated on a barren mountain site overlooking the Chukchi Sea, as does an individual isolated at a remote IGY station connected by road, to a town or village. Therefore, as reflected throughout an autobiographical literature (11, 18, 24, 58, 59, 95, 108) and a literature concerned with both the psychological and physiological effects resulting from being located within polar regions during the winter months (20, 33, 79, 80, 85, 93, 96, 97), it becomes readily apparent that the most salient factor involved

within each situation involving isolation is monotony. However, the effects of a monotonous environment on more specific functional behaviors in man were virtually untouched throughout this literature. Therefore, in order to fully assess the effects of isolation on specific functional abilities in man, it shall be necessary to explore an extensive literature within the area of which isolation has been experimentally approximated. Heron (53) relates that the pioneering work of Donald O. Hebb conducted in 1951 represented the first real objective attempt to fully assess the effects of isolation on man.

Hebb reportedly hypothesized in order to experimentally duplicate a monotonous environment, it would necessitate an absolute reduction in the intensity of stimuli, the patterning of stimuli, and the structuring of stimuli within an isolation chamber. These early beginnings toward experimentally duplicating isolation verified Hebb's hypothesis within their initial application by producing behavioral phenomena within his subjects which virtually paralleled those phenomena reported throughout earlier autobiographical writings (18, 95). These phenomena manifested in subjects beginning to reminisce about past incidents, friends and family.

Following this initial stage, all subjects began to exhibit childish emotional responses and experience loss of perspective and visual hallucinations. At the outset these visual phenomena were

relatively simple and consisted of lines, geometrical patterns and dots of light. However, as the duration of isolation was increased, these phenomena began to manifest in more complex imagery involving abstract patterns and recognizable figures followed by fully integrated scenes.

These integrated scenes were amazingly uniform as reported by Hebb's subjects. They involved animated characters, pre-historic monsters, and ranged upward to processions of objects and animals marching purposefully across the visual field. It was also reported within the general findings of this initial research that all visual phenomena experienced were so vivid as to interfere with sleep. In addition, it is interesting to note that all subjects reported little, if any, control over the content of these visual phenomena. Further, all subjects reported both auditory and tactile phenomena of which the tactile phenomena were similar in many respects to those sensations reported by individuals who have suffered the loss of a limb or limbs (45).

Apart from these findings, Hebb's initial report that mental functioning was impaired following isolation has been verified and supported throughout the general findings of other studies (8, 27, 38, 55, 104). In addition, subsequent research reported by Hebb, Heath and Stuart (52) and Heron, Bexton and Hebb (54) verifies Hebb's

original report of changes within the electrical activity of the brain occurring during isolation. Zubek and Wilgosh (134), Heron, Doane and Scott (55), and Zubek, Sanson and Prysiazniuk (132) report similar changes in brain wave activity during isolation. Other studies measuring these changes in brain wave activity lend further support to Hebb's initial report (129, 131, 133).

In explanation for the behavioral phenomena initially reported, Hebb (54) offered the hypothesis stating that in order for an organism to maintain normal, intelligent and adaptive behavior, a continually varied amount of sensory input was necessary. With the exception of several analytic studies (21, 37) which suggest that disturbances within ego functions, rather than cortical dysfunctions (8, 88), are responsible for the subjective disturbances reportedly occurring during isolation (23, 27, 72, 73), the original hypothesis proposed by Hebb (54) has been subjected to much experimental scrutiny and held to be valid (51, 52, 55, 72, 73, 104, 121).

As is to be expected, the initial reported findings of Hebb provided the impetus for a vibrant movement to assess experimentally the effects of a monotonous environment on various aspects of human behavior. However, it should be noted that Hebb's initial findings were reported under the name of perceptual isolation, whereas many subsequent studies have been reported under the name of sensory

deprivation, a misnomer, applied to the original isolation procedure (15, 110). Therefore, for reporting purposes of these literature, with the exception of the areas associated with maternal deprivation, the term isolation will be utilized in lieu of distinguishing between the specific procedures employed for duplicating a monotonous environment (65).

Although there existed the general consensus that exposure to isolation resulted in a wide variety of subjective disturbances ranging from anxiety to hallucinations (23, 27, 43, 51, 52, 53, 72, 73, 132, 136), other investigators ignored Hebb's original hypothesis (54) and the reported findings that isolation resulted in both cognitive and perceptual deterioration (54, 55, 104, 121, 132). This orientation resulted in the deterioration versus facilitation of learning hypothesis. This hypothesis stated that by adding the ingredient of intelligence to Hebb's original hypothesis, the learning process would be facilitated during isolation due to a reduction of extraneous stimuli which, theoretically, interfere with the acquisition of new material.

The advantages of this orientation were apparent in that input material could be totally controlled. Initially, Vernon and Hoffman (118) reported findings which were consistent with the facilitation hypothesis. However, subsequent investigation reported by Vernon and McGill (119), utilizing longer durations of isolation, resulted in

their refuting earlier findings (118) consistent with the facilitation of the learning hypothesis. Other studies have reported similar findings which lend support to the deterioration of learning hypothesis when isolated (2, 130). In addition to both cognitive and perceptual impairment resulting from isolation, the reported findings from other studies relate that isolation is responsible for changes in hormone metabolics (138, 139), color vision (55), dexterity (23, 116), intellectual-perceptual changes similar to those resulting from old age (9), and experimental deafness (52).

Although females reportedly tend to terminate the isolated circumstance sooner than males, isolation nevertheless effects identical behavioral phenomena in the female as it does within the male (92, 139). However, it has been reported that when males are allowed verbal contact with females when isolated the effects of isolation still occur but are ameliorated (23). In addition to verbal contact reducing the effects of isolation, prior knowledge of the effects of isolation also is believed beneficial in reducing the phenomena experienced (92, 135, 139).

Subsequent investigation conducted by Zuckerman and Haber (137) relates that individual tolerance toward the stressful situation of isolation, rather than prior knowledge of the phenomena to be expected, is the most salient factor responsible for the reduction of

these phenomena. Becker (7) agrees with Zuckerman and Haber's conclusion that tolerance toward stress may significantly reduce these phenomena; however, he relates that stress tolerance is intricately related to personality. Grenbaum, Freedman and Greenblatt (44) lend much support to this theory. They relate that individuals react to isolation in accordance with habitual defense resources which essentially parallel Becker's reported findings that introverts utilize totally different coping mechanisms than do extroverts during isolation to reduce its effects.

Aside from studies suggesting that differences in personality may be responsible for the observed reduction of behavioral phenomena during isolation, it has been reported by Davis, McCourt and Solomon (22), Doane, Mahotoo, Heron and Scott (27), Vernon, McGill and Schiffman (117), Vernon and McGill (119), Zubek, Sanson and Prysiazniuk (132), and Rosenbaum, Dobie and Cohen (98) that the presence of light within the isolated situation apparently is necessary to produce visual hallucinations. Freedman and Held (32) lend strong support to these findings and further relate that the severity of visual hallucinations actually can be controlled by light manipulation.

Light manipulation during isolation has been utilized for purposes other than controlling the severity of visual hallucinations.

Jones (61) relates that he has successfully employed light manipulation for reinforcement of responses in the human being. Other studies also relate similar findings (62, 78). These reported findings supported earlier suggestions by Butler and Alexander (16) and Butler and Harlow (17), proposing that an organism required a fixed amount of visual stimuli on a daily basis. In addition to the manipulation of light for determining its reinforcement value, other studies relate that both auditory and tactile stimulation may be manipulated during isolation for producing identical reinforcement qualities (63, 84).

Thus, Hebb's initial findings that isolation produced visual, auditory and tactile phenomena in man (53) provided the impetus for employing these variables to determine the stimulation need in man (137). Initial attempts to determine this stimulation need led to a widespread interest in what has become known as social isolation (71). The underlying premise of this particular aspect of isolation necessitates deprivation of social contact during isolation followed by social contact, utilized for its reinforcement effectiveness. The utilization of this technique has been found most effective when only verbal contact is employed, and seemingly produces best results when employed with children who theoretially display significantly more need for social contact than do adults (28, 31, 70).

In addition to a basic need for stimulation in man, the utilization of social contact following brief periods of isolation, significantly increases simple learning or conditioning among children (28, 56, 68, 69, 70, 125). Gewirtz and Baur (35, 36), pursuing an explanation for this phenomenon, proposed that man possesses an innate need for social contact which is aroused during isolation, and only satisfied through social saturation. This explanation for the effectiveness of social contact following brief isolation is contrary to the proposition of Walters and Karal (122), who relate that the reinforcer effectiveness of social contact following isolation is the result of anxiety produced by the isolated situation. Taylor (114) and Taylor and Spence (115) lend support to this proposition as do the findings reported throughout other studies (14, 64, 69, 123, 124, 125).

The effects of isolation in any form are temporary within the adult human being. These effects also are temporary when carefully employed with young children for experimental purposes. However, the effects of isolation from the maternal perspective during early infancy reflect that isolation from normal maternal experiences has lasting effects. Ribble (94) has demonstrated that if denied tactile contact during early infancy, the human infant responds by manifesting various physiological disorders. She relates that these disorders range from gastro-intestinal problems to stuporous sleep.

She further relates that problems of this nature are observed in the offspring of emotionally disturbed women, and that if the mother is directed to provide tactile contact, these physiological disturbances usually reverse themselves.

In addition to physiological disturbances resulting from partial maternal deprivation, Goldfarb (43) relates that observations of institutionalized children deprived of adequate mothering in the form of physical contact exhibit basic defects in all areas of personality development. Subsequent research by Goldfarb (42) relates that these deficits in personality manifest themselves in deviant behaviors during later childhood. The most prevalent of these behaviors are anxiety, restlessness, hypertension, inability to concentrate, overt aggression, impudence, destructiveness, and cruelty. In addition to these maladaptive behaviors, speech retardation, school deficiency, and mental retardation are believed significantly related to maternal deprivation.

Goldfarb (41) in a previous study concerned with institutionalized children and the effects of maternal deprivation during early infancy on personality at the adolescent level reports finding that retardation in social maturity results from being externally controlled throughout the developmental years of childhood. He further relates that institutionalized children upon reaching the adolescent level are

unable to cope with foster home situations, which requires their relying upon their own inner will. To substantiate these previous observations made at the adolescent level, Goldfarb (40) utilized the Rorschach, a projective psychological testing instrument designed to assess deviant personality patterns and intellectual attainment. When compared to children residing in foster homes, institutionalized children were found to be lower in (1) intellectual attainment, (2) maturity, (3) control, (4) less differentiated, more impoverished, and (5) more passive, less ambitious and less capable of adjustments in relation to contention or goals.

Rubenstein (100, p. 1089) agrees with Goldfarb's findings, as does Dennis (25), Dennis and Sayegh (26, p. 81), Spitz (111), and White and Castle (128). Several others have conducted similar research concerned with the effects of deprivation during early infancy and have also reported similar findings (13, 90, 120).

As there can be no experimental deprivation with the human infant (101), inferences in regard to the total effects of maternal deprivation on the human infant must be derived from studies utilizing infrahuman species. Harlow and Zimmerman (49), utilizing mother surrogates with infant rhesus monkeys, relate that tactile contact is necessary for adequate development. In addition to tactile contact, the formation of early emotional attachments apparently is contingent

on food being supplied by the mother (47, 48). It also has been observed that early visual contact with mother objects form lasting relationships within infant rhesus monkeys and their ability to identify with parental objects (46).

Perhaps the most important aspect of the classical Harlow studies with the infant rhesus monkey has been the reported findings that when deprived of adequate maternal care during early infancy, behavior at the adult level is markedly abnormal which manifests in over-aggressiveness, antisocial tendencies, and the inability to initiate heterosexual relationships. In addition to these infrahuman behaviors being remarkably similar to human behavior following maternal deprivation (13, 25, 26, 40, 41, 42, 43, 90, 100, 111, 120), reports also reveal that both male and female rhesus monkeys deprived of early maternal relationships lack the behavioral ability to engage in sexual relationships. This inability to engage in sexual relationships is believed to be the result of a deficit in early learned grooming behaviors. Although maternally deprived female rhesus monkeys have conceived through being placed with normal experienced males, this artificial method of reproduction has resulted in the female monkey's displaying little, if any, attention to her offspring from the moment of birth onward.

Similar findings to these have been reported throughout the general conclusions of other studies concerned with the effects of maternal deprivation on infrahuman species (66, 74, 75, 76, 77, 86). From the standpoint of child development, maternal attentiveness must begin shortly following birth (39). Mussen, Conger and Kagan (83) relate that infant needs at birth initially consist of the need for oxygen and elimination, which are automatically reduced through innate mechanisms. However, needs consisting of alleviation of thirst, hunger, pain, and cold require the assistance of an adult who usually is the mother.

Munn (81) agrees with Mussen, Conger and Kagan and adds that gratification of these early behaviors is a significant factor in the socialization process. He further relates that in the process of alleviating these needs, early dependency behavior is initiated. Other studies have reported similar conclusions (103, 112, 113). Hurlock (60, p. 704) lends her support to the importance of meeting early infant needs. She also relates that existing circumstances within the family structure significantly influence the infant's personality development. In conclusion, she relates that early personality structures are formed through the interaction of first the mother, then the father, and later the siblings, and other familiar figures within the infant's environment.

Hoffman (57) agrees with Hurlock's contention. Peterson, Becker, Hellmer, Shoemaker and Quay (91) also agree with this contention, and add that the primacy, the intimacy, and extensive protraction of parental influences represent a crucial role in the formation of personality tendencies among children. The reported findings of other studies within this area also lend strong support to the theory of personality tendencies being acquired directly through parental influences (1, 4, 10, 12, 29, 50, 89, 90, 105, 106, 126, 127).

More systematic investigations concerned with the early acquisition of behavior relate that children acquire specific behaviors through the process of both identifying with parental behaviors and modeling certain adult behaviors (5, 30, 34, 67, 82, 87, 109). Bandura (3) and Bandura, Ross and Ross (6) relate that the child's key figures to model after are his parents. In fact, it is further emphasized that the behavioral patterns of parental models significantly determine if the child learns to think, perceive, and behave in beneficial or detrimental manners.

Bandura (3)) further asserts that modeling parental behavior is such a potentially powerful force that if parental models are emotionally disturbed or mentally ill, they provide faulty behaviors to both be imitated and modeled after by the child. He further states

that this is undoubtedly an important factor for the tendency for delinquency, crime, and various forms of mental illnesses to run in families. Coleman (19, 20) agrees with Bandura's general conclusions that faulty parental behavior may have detrimental effects upon the child's personality development. Coleman further specifically states that faulty parental models have lasting effects on the child throughout the developmental process upward to adulthood where personality characteristics are believed firmly established (127).

He further relates that faulty parent-child relationships or pathogenic family interactions are a fertile source of maladjustment throughout the formative years leading to adulthood. Although he fails to specifically state which type of child-rearing practices most often produces the maladjusted personality, he does relate that several types of child-rearing practices are consistently found in the clinical backgrounds of disturbed individuals.

From the perspective of child-rearing practices, these particular practices which seemingly are related to maladjustment in later years (107) consist of parental overprotection, rejection, over-indulgence, perfectionistic demands, faulty discipline, sibling rivalry, marital discord, and broken homes.

Rosen and Ian (99) and Schachter (102) agree with Coleman and Bandura that faulty parental models and particular child-rearing

practices produce maladaptive behaviors. They relate that children learn specific maladaptive behaviors as displayed by their parents. They further relate that neurotic parents may reward their children for neurotic behaviors.

Summary

Current social psychological theories of personality development are concerned with the cumulative effects of the parents' social and emotional behavior on the child. There exists a general consensus that parental behavior should be consistent during infancy and remain so throughout childhood. An extensive literature, reflecting the effects of isolation in both the real and experimental circumstance, suggests that when isolated within either situation, the behavioral phenomena representative of the neuroses persists for the duration of isolation.

Due to climatic circumstances within the physical environment of polar regions during the winter months, isolation from otherwise normally enjoyed activities is necessary due to the intense cold and darkness which prevails throughout the winter months. Isolation effects behavioral changes in both the male and female human being. If these changes should generalize to the family structure within polar regions, throughout the long winter months, inconsistencies

in maternal care may result. These inconsistencies in parental behavior may be potentially damaging to every segment of personality development among the offspring of individuals relocated into these areas for various reasons.

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CHAPTER III

METHODS AND PROCEDURES

This chapter deals with a description of the subjects, design of the study, description of the instrument, and procedures for collecting and treating data.

Subjects

The subjects selected for this study were college students born between the years 1949 and 1953, which is representative of ages eighteen through twenty-two.

As very few individuals of Negro and Latin-American descent populate the northern regions of Alaska, and in order to control both the sociological and cultural differences which may exist within the native Eskimo and those persons of Aleut extractions, subject selection was restricted to Caucasians. The restriction in regard to age was believed necessary in order to derive a representative sample of college students from the freshman to senior levels, and to derive a representative sample of young adulthood which, when related to attained age, is ambiguous.

There was a total of 120 subjects used in the design of this study. Of this number, 60 subjects were enrolled in North Texas State University, Denton, Texas, and 60 subjects were enrolled in the University of Alaska, College, Alaska. The subjects were further subdivided in that 30 males and 30 females comprised each group. To further facilitate the design of this study, the subjects were further subdivided based on the presence of siblings. Therefore, each group contained 15 males and 15 females with siblings, and 15 males and 15 females with no siblings.

Design of the Study

Subjects selected for Group A were college students enrolled at North Texas State University, Denton, Texas, during the fall of 1971. Subjects selected for Group B were college students enrolled at the University of Alaska, College, Alaska, during the fall of 1971.

At the onset, to assure homogeneity of Group A, the completion of a questionnaire (Appendix C), incorporating the following requirements prior to final selection must have been met.

Requirements for Group A:

1. that the subject be of Caucasian extraction;
2. that the subject be born and reared within the continental United States;

3. that the subject, throughout his entire life, never had been exposed to life within polar regions;

4. that the subject's parents had been born and reared within non-polar regions;

5. that the subject must have been reared under the influence of both parents until the eighteenth birthday;

6. that the subject not recall any significant physiological handicaps which may have affected personality development throughout the developmental period; and

7. that the subject either has or does not have brothers or sisters, or both. If yes, the subject must have lived with them.

After completion of the questionnaire, those subjects, both male and female, who met the selection requirements for Group A were divided into two separate groups consisting of those with siblings and those without siblings. From this initial division, random selection procedures were utilized for final selection of fifteen males with siblings and fifteen males without siblings. Random selection procedures were also utilized for selection of fifteen female subjects with siblings and fifteen female subjects without siblings.

At the outset, to assure homogeneity of Group B, the completion of a questionnaire (Appendix D) incorporating the following requirements prior to final selection must have been met:

Requirements for Group B:

1. that the subject be of Caucasian extraction;

2. that the subject be born and reared within polar regions;

3. that the subject, throughout his entire life, never had been exposed to life outside polar regions for periods exceeding four consecutive months;

4. that the subject's parents were both born and reared outside polar regions;

5. that the subject must have been reared under the parental influence of both parents until the eighteenth birthday;

6. that the subject not recall any significant physiological handicaps which may have affected personality development throughout the developmental period; and

7. that the subject either has or does not have brothers or sisters, or both. If yes, the subject must have lived with them.

After completion of the questionnaire, those subjects, both male and female, who met the selection requirements for both Group A and B were equally divided into two separate groups consisting of those with siblings and those without siblings.

From this initial division, random selection procedures were utilized for final selection of fifteen males with siblings and fifteen males without siblings. Random selection procedures were also utilized for selection of fifteen female subjects with siblings and fifteen female subjects without siblings.

To clarify the design of the study, the following illustration is presented:

	Siblings	No Siblings
Group A Subjects who were born and raised outside polar regions by parents reared outside polar regions	15 males 15 females	15 males 15 females
Group B Subjects who were born and raised in polar regions by parents reared outside polar regions	15 males 15 females	15 males 15 females

Fig. 1. An illustration of the design of the study showing distribution of the subjects.

All subjects meeting selection requirements within both Group A and B were asked to complete the Guilford Zimmerman Temperament Survey on a group basis. Those subjects who were unable to complete the instrument at the designated time were administered the scale individually.

Instrument

The instrument utilized in order to carry out the purposes of this study was the Guilford Zimmerman Temperament Survey. This instrument utilizes ten scores which present fairly uniform indicators of the particular traits which the instrument purports to measure (Appendix A). Buros (2, p. 134) and Buros (3, p. 235)

lists fifty-three studies utilizing the Guilford Zimmerman Temperament Survey in age grouping nine through sixteen and on the adult level. Saunders in the Buros review is concerned with the usefulness of the Guilford Zimmerman Temperament Survey and asserts that this particular instrument has done much to demonstrate the potential advantages of the factor-analytic approach to personality measurement.

The reliability of the Guilford Zimmerman Temperament Survey, after applying the Kuder-Richardson formula and using a random sample of 100, is as follows:

DATA ON RELIABILITY OF THE SCORES

Trait	Reliability Coefficient
G	.79
R	.80
A	.82
S	.87
E	.84
O	.75
F	.75
T	.80
P	.80
M	.85

Fig. 2. An Illustration of the Reliability of the Guilford Zimmerman Temperament Survey

The internal validity of the Guilford Zimmerman Temperament Survey is rooted both in the factoral validity and the factor-analysis studies plus the successive item-analyses. The applicable (clinical or in use) validity based upon various correlational studies, has been accumulated throughout the years and ranges from a low of .86 to a high of .93. The validity coefficients are derived by making use of the formula where the validity is less than or equal to the square root of the reliability coefficients.

The Guilford Zimmerman Temperament Survey also utilizes the "yes" and "no" response patterns as opposed to "true" and "false." Therefore, the Guilford Zimmerman Temperament Survey is so designed as to obtain spontaneous responses which are believed to be more indicative of the individual's true feelings.

Procedures for Collection of Data

Subject selection was carried out for both Group A and B using the criterion outlined in Appendix C and Appendix D. As the literature suggests that the presence of siblings within the family structure significantly influences the child's development, i.e., children spared sibling relationships generally make better adjustments to life and their parents (5). The thirty male and thirty female subjects in both Group A and Group B were divided into equal

groups consisting of fifteen males with siblings, fifteen males without siblings, fifteen females with siblings, and fifteen females without siblings. No other confounding variables were anticipated in regard to possible sibling influences.

All subjects meeting selection requirements in Group A and Group B were asked to complete the Guilford Zimmerman Temperament Survey on a group basis. For those subjects whose schedule did not allow completion of the survey at the designated times, the Guilford Zimmerman Temperament Survey was administered individually. Thus, no eligible subject was eliminated from either group because he could not complete the survey at the designated times.

Procedures for Analysis of the Data

The null hypothesis that there will be no significant differences between the two groups was tested at the .05 level of significance for a two tailed test.

In order to determine the homogeneity of variance of the distribution of the sample population prior to testing for significant differences, Bartlett's Test of Homogeneity was utilized.

Since the homogeneity of the group was supported, which according to Lindquist (5, pp. 86-87) is the usual situation, all ten

hypotheses were tested by making use of the two-way analysis of variance. In those instances where a difference existed between the personality traits measured, as derived from each of the ten scales of the Guilford Zimmerman Temperament Survey, a parallel comparison was made to determine if those differences were statistically significant. This was accomplished through the use of Tukey's Test of Parallel Comparisons. In those instances where statistical differences were found to be significant, the one-way analysis of variance was utilized to identify sex and sibling influences within each of the two respective groups.

Chapter III has presented a description of the subjects involved in the study and the procedures involved in their selection. A detailed explanation of the design of the study was also presented. Finally, the procedures for collecting and treating the data were outlined.

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CHAPTER IV

PRESENTATION AND DISCUSSION OF RESULTS

The problem of this study was to determine if climatic circumstances significantly affect personality development. The purposes of this study were: (1) to determine if significant differences in personality traits exist between college students reared within polar regions by parents who were reared within non-polar regions, as compared to college students reared within non-polar regions by parents who were reared within non-polar regions; (2) to identify the area or areas in which personality traits differ among these individuals; (3) to report these differences and their significance to society and our educational system.

To determine if climatic circumstances significantly affect personality development, a total of 120 subjects were selected from two populations, each encompassing totally different climatic circumstances within the physical environment. Subjects comprising Group A were representative of those individuals who were born in the continental United States and reared within these regions. Subjects comprising Group B represented those individuals who were

born within polar regions and reared within these regions by both parents until age eighteen. The most common factor between Group A and Group B subjects was that both groups were selected from a population which necessitated their parents' being born and reared within the continental United States.

Prior to the selection of the appropriate statistical treatment of the data derived from the administration of the Guilford Zimmerman Temperament Survey, the Bartlett's Test of Homogeneity was utilized to determine if significant differences in variance existed between the groups. In order for there to be a significant difference in variance between the groups, the Chi-Square value must be equal to or exceed 7.81 when the .05 level of significance is chosen. Results obtained from the Bartlett's Test of Homogeneity indicated that no significant differences in variance existed between both groups, between sex factors within both groups, and between subjects with and without siblings.

To test each of the ten hypotheses related to differences between subjects within Group A and Group B, a two way analysis of variance was utilized. The analysis of variance between both groups for all ten hypotheses is presented in Table I.

The computed F levels for all tested hypotheses except hypotheses three and seven are not statistically significant. This

TABLE I

THE OUTCOME OF THE TWO-WAY ANALYSIS OF VARIANCE ON EACH OF THE TEN HYPOTHESES WHICH REPRESENTS THE TEN SCALES OF THE GUILFORD ZIMMERMAN TEMPERAMENT SURVEY
(N = 120)

	Sum of Squares	Degrees of Freedom	Mean Squares	F Level	P
Hypothesis I					
Row	15.4083	1	15.4083	0.5663	0.5402
Column	52,0083	1	52.0083	1.9115	0.1659
Interaction	78.4083	1	78.4083	2.8818	0.0884
Within	3156.1667	116	27.2083		
Total	3301.9917	119			
Hypothesis II					
Row	5.6333	1	5.6333	0.2513	0.6231
Column	9.6333	1	9.6333	0.4298	0.5205
Interaction	56.0333	1	56.0333	2.4999	0.1126
Within	2600.0000	116			
Total	2671.3000	119			
Hypothesis III					
Row	1.6333	1	1.6333	0.0496	0.8188
Column	132.3000	1	130.2083	4.0213*	0.0445
Interaction	1.2000	1	1.2000	0.0365	0.8431
Within	3816.3333	116			
Total	3951.4667	119			

TABLE I (Cont'd)

	Sum of Squares	Degrees of Freedom	Mean Squares	F Level	P
Hypothesis IV					
Row	1.4083	1	1.4083	0.0358	0.8444
Column	130.2083	1	130.2083	3.3143	0.0677
Interaction	106.4083	1	106.4083	2.7085	0.0985
Within	4557.3000	116	39.2871		
Total	4795.3250	119			
Hypothesis V					
Row	0.0750	1	0.0750	0.0023	0.9605
Column	37.4083	1	37.4083	1.1646	0.2825
Interaction	57.4083	1	57.4083	1.7872	0.1806
Within	3726.1000	116	32.1216		
Total	3820.9917	119			
Hypothesis VI					
Row	4.0333	1	4.0333	0.1313	0.7186
Column	2.1333	1	2.1333	0.0694	0.7887
Interaction	8.5333	1	8.5333	0.2778	0.6057
Within	3563.6667	116	30.7213		
Total	3578.3667	119			
Hypothesis VII					
Row	13.3333	1	13.3333	0.4605	0.5059
Column	145.2000	1	145.2000	5.0150*	0.0254
Interaction	58.8000	1	58.8000	2.0309	0.1531
Within	3358.5333	116	28.9529		
Total	3575.8667	119			

TABLE I (Cont'd)

	Sum of Squares	Degrees of Freedom	Mean Squares	F Level	P
Hypothesis VIII					
Row	11.4083	1	11.4083	0.4462	0.5126
Column	95.4083	1	95.4083	3.7315	0.0527
Interaction	15.4083	1	15.4083	0.6026	0.5547
Within	2965.9000	116	25.5681		
Total	3088.1250	119			
Hypothesis IX					
Row	0.0083	1	0.0083	0.0003	0.9827
Column	15.4083	1	15.4083	0.6470	0.5715
Interaction	1.0083	1	1.0083	0.0423	0.8317
Within	2762.7000	116	23.8164		
Total	2779.1250	119			
Hypothesis X					
Row	4.4083	1	4.4083	0.1123	0.7376
Column	23.4083	1	23.4083	0.5966	0.5523
Interaction	0.4083	1	0.4083	0.0104	0.9156
Within	4551.7667	116			
Total	4579.9917	119			

*.05 Level of Significance

means no statistical difference between Group A and Group B exists on Hypotheses One, Two, Four, Five, Six, Eight, Nine, and Ten. The findings of significant differences between the group means on Hypotheses Three and Seven incorporate both sex and sibling factors

within the total population of both groups. However, the finding of significant statistical differences on Hypotheses Three and Seven were not further substantiated when Tukey's Test of Parallel Comparisons was employed.

Therefore, to more systematically differentiate between the potentially significant variables of subject sex and sibling influences, each hypothesis was tested in relation to these variables by comparing males within both groups, with and without siblings, and females within both groups, with and without siblings. The statistical results obtained from a one-way analysis of variance among female subjects within both groups is presented in Table II.

TABLE II

THE OUTCOME OF THE ONE-WAY ANALYSIS OF VARIANCE AMONG THE TOTAL NUMBER OF FEMALES WITHIN GROUP A AND GROUP B ON EACH OF THE TEN HYPOTHESES
(N = 120)

	Sum of Squares	Degrees of Freedom	Variance Estimate	F Level	P
Hypothesis I					
Between	290.2000	3	96.9333	4.0902*	0.0108
Within	1324.4000	56	23.6500		
Total	1614.6000	59			

TABLE II (Cont'd)

	Sum of Squares	Degrees of Freedom	Variance Estimate	F Level	P
Hypothesis II					
Between	4.8500	3	1.6167	0.0913	0.9637
Within	991.7333	56	17.7095		
Total	996.5833	59			
Hypothesis III					
Between	334.1333	3	111.3778	3.1972*	0.0296
Within	1950.8000	56	34.8357		
Total	2284.9333	59			
Hypothesis IV					
Between	447.1167	3	149.0389	3.8471*	0.0141
Within	2169.4667	56	38.7405		
Total	2616.5833	59			
Hypothesis V					
Between	99.9167	3	33.3056	1.1703	0.3292
Within	1593.7333	56	28.4595		
Total	1693.6500	59			
Hypothesis VI					
Between	62.4667	3	20.8222	0.7644	0.5216
Within	1525.4667	56	27.2405		
Total	1587.9333	59			
Hypothesis VII					
Between	42.8500	3	14.2833	0.6280	0.6037
Within	1273.7333	56	22.7452		
Total	1316.5833	59			

TABLE II (Cont'd)

	Sum of Squares	Degrees of Freedom	Variance Estimate	F Level	P
Hypothesis VIII					
Between	134.2667	3	44.7556	2.2285	0.0937
Within	1124.6667	56	20.0833		
Total	1258.9333	59			
Hypothesis IX					
Between	38.7333	3	12.9111	0.5574	0.6495
Within	1297.2000	56	23.1643		
Total	1335.9333	59			
Hypothesis X					
Between	25.9333	3	8.6444	0.3895	0.7642
Within	1242.8000	56	22.1929		
Total	1268.7333	59			

*.05 Level of Significance

The computed F ratios for all tested hypotheses among females in both groups with and without siblings except Hypotheses One, Three, and Four were not significantly different. This means that no statistical differences existed on Hypotheses Two, Five, Six, Seven, Eight, Nine, and Ten.

The significant differences noted on Hypotheses One, Three, and Four were subjected to Tukey's Test of Parallel Comparisons.

This was necessary to determine exactly which females within both groups differed. The results of Tukey's Test of Parallel Comparisons reflected that the significant differences noted on Hypothesis One existed between females in Group A without siblings as compared to females in Group B without siblings (Tukey's Value = 4.75893). Furthermore, females in Group B without siblings differed significantly from females in Group B with siblings (Tukey's Value = 4.53919). The significant differences noted between females within Group A and Group B on Hypothesis Three were confined to females in Group A spared siblings and females in Group B spared siblings (Tukey's Value = 5.77572). No other groups differed significantly from each other when Tukey's Test of Parallel Comparisons was employed for Hypothesis Three.

The significant differences noted on Hypothesis Four also were confined to females in Group A spared siblings compared to females in Group B spared siblings (Tukey's Value = 6.09082). In addition the Tukey's test revealed that significant differences existed between females in Group B with siblings as compared to females in Group B without siblings (Tukey's Value = 5.80959). Among male subjects comprising both Group A and B with and without siblings a one-way analysis of variance was computed. These data for all ten hypotheses are presented in Table III.

TABLE III

THE OUTCOME OF THE ONE-WAY ANALYSIS OF VARIANCE AMONG THE TOTAL NUMBER OF MALES WITHIN GROUP A AND GROUP B ON EACH OF THE TEN HYPOTHESES (N = 120)

	Sum of Squares	Degrees of Freedom	Variance Estimate	F Level	P
Hypothesis I					
Between	10.5833	3	3.5278	0.1182	0.9483
Within	1671.6000	56	29.8500		
Total	1682.1833	59			
Hypothesis II					
Between	122.5833	3	40.8611	1.4748	0.2301
Within	1551.6000	56	27.7071		
Total	1674.1833	59			
Hypothesis III					
Between	98.0000	3	32.6667	1.1664	0.3307
Within	1568.4000	56	28.0071		
Total	1666.4000	59			
Hypothesis IV					
Between	65.9333	3	21.9778	0.6170	0.6107
Within	1994.8000	56	35.6214		
Total	2060.7333	59			
Hypothesis V					
Between	48.4000	3	16.1333	0.4488	0.7230
Within	2012.9333	56	35.9452		
Total	2061.333	59			

TABLE III (Cont'd)

	Sum of Squares	Degrees of Freedom	Variance Estimate	F Level	P
Hypothesis VI					
Between	148.5333	3	49.5111	1.5479	0.2110
Within	1791.2000	56	31.9857		
Total	1939.7333	59			
Hypothesis VII					
Between	216.1833	3	72.0611	1.9767	0.1266
Within	2041.4667	56	36.4548		
Total	2257.6500	59			
Hypothesis VIII					
Between	146.1833	3	48.7278	1.7076	0.1746
Within	1598.0000	56	28.5357		
Total	1744.1833	59			
Hypothesis IX					
Between	25.2500	3	8.4167	0.3393	0.7994
Within	1388.9333	56	24.8024		
Total	1414.1833	59			
Hypothesis X					
Between	82.1833	3	27.3944	1.1791	0.3258
Within	1301.0667	56	23.2333		
Total	1383.2500	59			

The computed F levels for all ten tested hypotheses are not significantly different. This means that when subject sex, and possible sibling influences were combined in the total number of males in Group A compared to males in Group B, no significant differences were ascertained.

The results of initial statistical findings utilizing a two-way analysis of variance on all ten stated hypotheses revealed no statistical differences among all subjects within Group A and Group B on Hypotheses One, Two, Four, Five, Six, Eight, Nine, and Ten at the (p .05) level. Hypotheses Three and Seven were accepted; however, the findings of significant differences between the mean scores on Hypotheses Three and Seven must be interpreted very generally. This is necessary because the significant differences between the mean scores on Hypotheses Three and Seven may have been confounded by the subject sex and the presence or lack of presence of siblings throughout the developmental years. The prospect of this possibility necessitated further statistical analysis differentiating between subject sex and presence of siblings within both Group A and Group B.

A more rigorous analysis of these factors utilizing the one-way analysis of variance revealed that significant differences between the mean scores on each of the ten stated hypotheses between males

in both Groups A and Groups B were non-existent. However, statistical scrutiny among females in both groups A and Group B revealed that significant differences between the mean scores on Hypotheses One, Three, and Four existed. The significant differences between groups noted on these hypotheses were consistent in revealing that significant differences in mean scores existed among female subjects spared siblings throughout the developmental years.

The finding of significant differences between the group means on Hypothesis One revealed that females in Group A without siblings scored significantly higher on the General Activity scale of the Guilford Zimmerman Temperament Survey than did female counterparts in Group B. The Manual for the Guilford Zimmerman Temperament Survey does not incorporate clinical interpretations of the scales which may be utilized for group interpretations. However, for the purpose of making inferences from individual interpretations to group situations, a significantly higher score on any of the ten scales obtained by a homogeneous group should be sufficient for determining personality trends within the group.

The finding of significant differences on Hypothesis One between females spared sibling relationships within both Group A and Group B tends to indicate that Group A females may be more active in

overall endeavors. The Manual for the Guilford Zimmerman Temperament Survey relates that high scores on the General Activity scale indicates an energetic and efficient individual.

The findings of significant differences on Hypothesis Three indicates that females spared siblings within Group A scored higher on the Ascendance scale of the Guilford Zimmerman Temperament Survey. These significantly higher group scores may indicate that as a group females spared siblings within Group A tend to display more leadership habits, be more socially aggressive, and display more adaptive social behaviors than their female counterparts in Group B.

The finding of significant differences on Hypothesis Four between females spared siblings in Group A compared to their female counterparts in Group B tends to indicate that Group A females may be more socially active. Interpreted from a group perspective, the Manual of the Guilford Zimmerman Temperament Survey suggests that high scores on the Sociability scale may be indicative of having many friends, seeking friends, desiring social activity, and being at ease around others.

Significant findings on Hypotheses One, Three and Four tend to indicate a sociability trend which indicates that females spared siblings in Group A may be significantly more socially oriented than

females spared siblings in Group B. These findings lend support to the proposition that individuals spared sibling influences throughout the developmental process make better adjustments to parental demands and generally make better overall adjustments to social life at the adult level (7). The possible relationship of sibling deprivation to increased social behavior is further reflected in the significant differences noted among females in Group B on both Hypotheses One and Four.

It was noted that when females spared sibling influences were compared to females with siblings in Group B, the significant differences noted between Group A and Group B females were consistent for Hypotheses One and Four. The significant differences noted on Hypotheses One and Four pertained to interaction between females in Group B. These significant differences between females in Group A and Group B, and between females in Group B are presented in Table IV.

TABLE IV

A ONE-WAY ANALYSIS OF VARIANCE BETWEEN GROUP A AND GROUP B FEMALES WITH AND WITHOUT SIBLINGS AND BETWEEN FEMALES WITH AND WITHOUT SIBLINGS COMPRISING GROUP B ON HYPOTHESES ONE, THREE, AND FOUR
(N = 60)

Hypotheses	Mean Scores
Hypothesis I	
Group A females without siblings	19.0667
Group B females without siblings	13.2667
Group B females with siblings	18.0667
Group B females without siblings	13.2667
Hypothesis II	
Group A without siblings	17.2000
Group B without siblings	10.9333
Hypothesis IV	
Group A without siblings	20.8000
Group B without siblings	13.8000
Group B with siblings	19.9333
Group B without siblings	13.8000

The finding of significant differences between group means among females in Group A compared to females in Group B on Hypotheses One, Three, and Four suggests that sibling absence may increase or decrease social behavior in certain areas of personality development. The significant findings between Group A and Group B means on Hypotheses One, Three, and Four, and the significant findings between females in Group B, suggests that females reared without siblings in the more temperate climates display more socially adaptive behavior than females reared in polar regions.

These contrasting statistical findings noted exclusively among females in both groups, and between females in Group B, partially negate the probability of parental factors being responsible for the differences observed. The more probable explanation would be the social circumstances surrounding Group A and B. It has been previously stated that subjects deprived of sibling influences usually make better social adjustments. The findings between Group A and Group B lend support to this proposition.

However, it should be noted that these significant differences only were found in Group A females who were spared sibling influences within the more temperate geographical regions of the continental United States. It also should be noted that the absence of siblings in Group B females produced a reversal of the effects of sibling

deprivation. Notwithstanding the effects of parental influences being important variables in the child's socialization process, the availability of social avenues may be more important for adequate adjustment throughout the developmental years.

Subjects in the geographic regions of the continental United States have more opportunities for social contacts with their peers due to more amenable climatic circumstances than subjects in polar regions. From the standpoint of personality development and the acquisition of adaptive social behavior play activity within peer groups apparently is a necessary component. Coleman (7, p. 64) relates that through play activities within peer groups the child learns appropriate sex roles, his relation to his world, and appropriate social behaviors.

The availability of avenues leading to early play activities are abundant throughout the continental United States where climatic conditions are both predictable and compatible. Therefore, a child spared siblings may compensate for age mates through play activity throughout the year. The proposition that individuals spared sibling effects are more well adjusted (7) perhaps deserves merit. However, this proposition is seemingly valid only within the temperate regions of this society.

The significant findings noted on Hypotheses One, Three, and Four between females in Group A and Group B are contrary to those findings noted on Hypotheses One and Four in Group B. These contrasting findings reflect that females reared in polar regions are more socially withdrawn if denied sibling effects throughout the developmental process. These findings suggest that a need exists among these individuals for sibling effect to foster the acquisition of social behavior.

This hypothesis is necessary due to the fact that within polar regions for significant periods of each year the child is prohibited by climatic circumstances from engaging maximum amounts of peer activity. Peer activities are normally conducted outside the home environment. Therefore, if prevailing circumstances prohibit these activities, social deprivation may result which may offer a plausible explanation for the reversal effect noted among females in Group B without siblings and the consistency of this effect throughout all significant hypotheses.

In support of the interpretation of findings between Group A and Group B, and the contrasting findings between females in Group B on Hypotheses One and Four. Reference is made to Coleman (1, p. 142), who relates that if normal avenues for peer interactions are blocked, all future social behavior may be permanently impaired.

White (6, p. 179) and Munsinger (3) lend their support to this theory and White further states that many factors including geographical location may reduce the occurrence of peer interactions.

The failure to find significant differences between male subjects comprising Group A and Group B on any variable tested by the ten hypotheses cannot be explained in certain terms. However, it is known that males are not restricted to the home environment due to social necessity. Therefore, the ability to engage in a wide variety of social behaviors from a very early age at locations other than within the home may explain why no significance was noted.

Summary

Chapter IV has presented the results of the Bartlet's Test of Homogeneity of Variance for Group A and Group B, following the determination that variance between Group A and Group B was homogeneous. The two-way analysis of variance was employed to determine if significant differences existed between the mean scores of each group on each of the ten hypotheses tested. Initially, significant differences were noted on Hypotheses Three and Seven among both groups. However, the Tukey's Test of Parallel Comparisons failed to support these differences.

The one-way analysis of variance was employed to differentiate between subject sex and sibling effects among subjects in Group A and Group B. The analysis of these variables reflected that significant differences existed for Hypotheses One, Three and Four between females with and without siblings in Group A and Group B. In addition significant differences were found between the mean scores for Hypotheses One and Four among females in Group B.

The one-way analysis of variance was applied to the initial finding of significant differences between the mean scores on Hypotheses Three and Seven. The results of this analysis provided no statistical differences between any mean score on all ten hypotheses tested for males with and without siblings in Group A and Group B. Finally, the results of Hypotheses One, Three, and Four were interpreted on a group basis for both Group A and Group B. The significant differences in mean scores on Hypotheses One and Four between females with and without siblings in Group B were also discussed.

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CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The problem of this study was to determine if climatic circumstances significantly affect personality development. The purposes of this study were: (1) to determine if significant differences in personality traits exist between college students reared within polar regions by parents who were reared within non-polar regions, as compared to college students reared within non-polar regions by parents who were reared within non-polar regions; (2) to identify the area or areas in which personality traits differ among these individuals; and (3) to report these differences and their significance to society and our educational system.

In order to determine if climatic circumstances significantly affected personality development a total of 120 subjects was selected and divided into two groups of sixty each. These subjects represented a population which essentially paralleled the identical socialization process within two totally different geographic locations of this society. Final subject selection for both groups was contingent

on their parents' being born and reared within the geographic locations of the continental United States.

Hypothesis One predicted that there would be a significant difference between the mean scores of Group A compared to Group B on the General Activity scale of the Guilford Zimmerman Temperament Survey. A test of significant difference utilizing a two-way analysis of variance combining all group variables revealed no statistical difference at the ($p < .05$) level of significance. However, a test of significant difference utilizing a one-way analysis of variance to determine if a significant difference existed between the mean scores of males and females, with and without siblings, in both groups resulted in Hypothesis One being accepted at the ($p < .05$) level of significance for females only.

Hypothesis Two predicted that there would be a significant difference between the mean scores of Group A compared to Group B on the Restraint scale of the Guilford Zimmerman Temperament Survey. A test of significant difference utilizing a two-way analysis of variance combining all group variables revealed no statistical difference at the ($p < .05$) level of significance. The results of a one-way analysis of variance on sex and sibling variables within both groups further revealed that no statistical difference between the mean scores of Group A and Group B was present at the ($p < .05$)

level of significance.

Hypothesis Three predicted that there would be a significant difference between the mean scores of Group A compared to Group B on the Ascendance scale of the Guilford Zimmerman Temperament Survey. A test of significant difference utilizing a two-way analysis of variance combining all group variables initially resulted in the acceptance of Hypothesis Three at the ($p < .05$) level of significance. However, these significant findings were not substantiated when Tukey's Test of Parallel Comparisons was employed. A test of significant difference utilizing a one-way analysis of variance, to determine if a significant difference existed between the mean scores of males and females, with and without siblings in both groups, resulted in Hypothesis Three being accepted at the ($p < .05$) level of significance for females only.

Hypothesis Four predicted that there would be a significant difference between the mean scores of Group A compared to Group B on the Sociability scale of the Guilford Zimmerman Temperament Survey. A test of significant differences utilizing a two-way analysis of variance combining all group variables revealed no statistical difference at the ($p < .05$) level of significance. However, a test of significant difference utilizing a one-way analysis of variance to determine if a significant difference existed between the mean scores

of males and females, with and without siblings in both groups, resulted in Hypothesis Four being accepted at the ($p < .05$) level of significance for females only.

Hypothesis Five predicted that there would be a significant difference between the mean scores of Group A compared to Group B on the Emotional Stability scale of the Guilford Zimmerman Temperament Survey. A test of significant difference utilizing a two-way analysis of variance combining all group variables revealed no statistical difference at the ($p < .05$) level of significance. The results of a one-way analysis of variance on sex and sibling variables within both groups further revealed that no statistical difference between the mean scores of Group A and Group B was present at the ($p < .05$) level of significance.

Hypothesis Six predicted that there would be a significant difference between the mean scores of Group A compared to Group B on the Objectivity scale of the Guilford Zimmerman Temperament Survey. A test of significant difference utilizing a two-way analysis of variance combining all group variables revealed no statistical difference at the ($p < .05$) level of significance. The results of a one-way analysis of variance on sex and sibling variables within both groups further revealed that no statistical difference between the

mean scores of Group A and Group B was present at the ($p < .05$) level of significance.

Hypothesis Seven predicted that there would be a significant difference between the mean score of Group A compared to Group B on the Friendliness scale of the Guilford Zimmerman Temperament Survey. A test of significant difference utilizing a two-way analysis of variance combining all group variables resulted in the acceptance of Hypothesis Seven at the ($p < .05$) level of significance. However, these significant findings were not substantiated when Tukey's Test of Parallel Comparisons was employed. The results of a one-way analysis of variance on sex and sibling variables within both groups further revealed that no statistical differences between the mean scores between Group A and Group B was present at the ($p < .05$) level of significance.

Hypothesis Eight predicted that there would be a significant difference between the mean scores of Group A compared to Group B on the Thoughtfulness scale of the Guilford Zimmerman Temperament Survey. A test of significant difference utilizing a two-way analysis of variance combining all group variables revealed no statistical difference at the ($p < .05$) level of significance. The results of a one-way analysis of variance on sex and sibling variables within both groups further revealed that no statistical difference between the

mean scores of Group A and Group B was present at the ($p < .05$) level of significance.

Hypothesis Nine predicted that there would be a significant difference between the mean scores of Group A compared to Group B on the Personal Relations scale of the Guilford Zimmerman Temperament Survey. A test of significant difference utilizing a two-way analysis of variance combining all group variables revealed no statistical difference at the ($p < .05$) level of significance. The results of a one-way analysis of variance on sex and sibling variables within both groups further revealed that no statistical difference between the mean scores of Group A and Group B was present at the ($p < .05$) level of significance.

Hypothesis Ten predicted that there would be a significant difference between the mean scores of Group A compared to Group B on the Masculinity scale of the Guilford Zimmerman Temperament Survey. A test of significant difference utilizing a two-way analysis of variance combining all group variables revealed no statistical difference at the ($p < .05$) level of significance. The results of a one-way analysis of variance on sex and sibling variables within both groups further revealed that no statistical difference between the mean scores of Group A and Group B was present at the ($p < .05$) level of significance.

Conclusions

The following conclusions were drawn based upon the findings in this study:

1. Males who were reared in the continental United States by parents who were reared within the geographic locations of the continental United States do not differ significantly on each of the ten scales as measured by the Guilford Zimmerman Temperament Survey from males reared in polar regions by parents who were reared in the continental United States.

2. Males reared with or without possible sibling influences do not differ significantly when born and raised within the continental United States or polar regions as measured by the Guilford Zimmerman Temperament Survey.

3. Females born and raised without siblings within the continental United States may display more socially oriented behavior than females without siblings born and raised within polar regions.

4. Sibling influences among females born and raised within the continental United States may not significantly affect overall personality adjustment.

5. Females born and raised within polar regions, denied sibling influences, are more socially withdrawn than females who have siblings.

In addition to the significant findings exclusively found among females within both Group A and Group B on Hypotheses One, Three, and Four, the climatic circumstances within polar regions require clarification in respect to the possible effects of these circumstances on personality development within the female. Fortunately, within the continental United States during the seasonal winter months weather conditions consisting of extreme cold and near total darkness are non-existent. Therefore, if the female is spared siblings during the early formative years where the foundations of personality are believed established, she can at least engage in peer relationships throughout a significant portion of the year.

This also is true of the male; however, under any circumstance the female's behavior is scrutinized at every moment for sociological problems involving her safety within this society. The result of this orientation may be responsible for no apparent significant differences resulting between males in Group A and Group B. The underlying rationale for this particular conclusion is that male behavior is not as highly scrutinized; therefore, regardless of the climatic circumstances, males may seek out peer relationships under any circumstance.

However, females reared within polar regions by parents reared within the continental United States may be prohibited from

venturing outside the home environment to engage in peer activity during the long winter months of near total darkness notwithstanding the intense cold. If this is the case, it may be a plausible explanation for the significantly lower scores between the group means on Hypotheses One, Three, and Four between the groups and consistently made by females without siblings in Group B.

Recommendations

Based on the research findings and conclusions of this study which suggest that females born and reared within polar regions without siblings display social withdrawal to a greater degree than do their counterparts in the more temperate locations of this society, the following recommendations are made:

1. An extensive longitudinal study designed to assess fully the effects of polar region circumstances on children's intellectual abilities, their attitudes toward school and their parents, and, if present, their siblings.

2. An extensive longitudinal study designed to assess fully parental attitudes pertaining to child rearing practices, especially female children following relocation into polar regions.

3. Community participation toward the development of day care centers for all children under the age of six years.

4. Development and implementation of programs within the existing educational facilities in polar regions to provide extensive opportunity for maximum social contact.

5. Funded programs designed in such a manner as to provide knowledge to parents in regard to the possible long-term effects on their children's personality development possibly resulting from being restricted to the home environment predominately during the winter months in polar regions.

APPENDICES

APPENDIX A

THE GUILFORD ZIMMERMAN TEMPERAMENT SURVEY

Interpretations of the Factors

G - General Activity

A high score indicates strong drive, energy, and activity. If coupled with the right kinds of other qualities, this is good. If coupled with the wrong kinds, it may be bad. High activity has the general effect of exaggerating the appearance of other qualities. In many ways, it may be regarded as a kind of catalyzer. If an individual is inclined to be domineering, his high status on G will make his domineering more obvious and overt. If he is high on T (reflectively inclined), his high G status should make his thoughtfulness and planning more effective in overt action. His high G status should prevent his high T quality from becoming withdrawn, useless, or futile philosophizing. A low G status may intensify low S, low A, or high F. A very high G score may indicate manic behavior, in which there is usually much random behavior and wasted effort. A very low G score, on the other hand, may represent a hypothyroid condition, anemia, or other physical causes of inactivity. In a young person, this would thus indicate the possible need for a medical examination.

R - Restraint

The results show that the happy-go-lucky, carefree, impulsive individual (low score) is not well suited to positions of responsibility, such as supervision. The other extreme, of the over-restrained, over-serious individual is also less promising, though the optimal position for a score of this trait is on the latter side of the average. It is possible that a great deal of restraint coupled with a very high score on G (activity) would mean internal conflict and consequent danger to mental health. It is also possible that too much restraint combined with a low G score would mean very low output.

A - Ascendance

It would seem that C scores below 6 (certainly those below 5) should be avoided in selecting foremen and supervisors. This would depend, however, somewhat upon the particular assignment and the personnel to be supervised. Ascendance is a relative matter, and the need for it varies according to the personalities of those to be supervised and the extent of face-to-face contacts required. Too high a score in A might become unfavorable if coupled with a low score on F (agreeableness). In such a person, there may be a tendency to ride rough-shod over others. It is important that a very high A score be balanced with favorable scores on T, R, M, and F.

S - Sociability

This score should be useful in vocational and personnel counseling wherever the trait of social participation is a consideration. The high and low scores indicate the contrast between the person who is at ease with others, enjoys their company and readily establishes intimate rapport, versus the withdrawn, reserved person who is hard to get to know. The relation of this score to the ratings of supervisory performance is so very low that by itself it is of little value in this connection. If the field of selection were narrowed to two candidates who were otherwise apparently of equal promise, the one with the higher C score on S (especially if one is 5 or above and the other is below 5) might be chosen. Relatively more attention might be paid to this trait score if the particular assignment calls for a sociable, out-going, cordial individual. These comments about S may well be generalized to apply by analogy in a corresponding manner to other traits where validities are quite low.

E - Emotional Stability

A high score indicates optimism and cheerfulness, on the one hand, and emotional stability on the other. A score here that is very high, however, if coupled with a low G score, may indicate a sluggish, phlegmatic, or lazy individual. A very low score is a sign of poor mental health in general; in other words, a neurotic tendency.

O - Objectivity

High scores mean less egoism; low scores mean touchiness or hypersensitivity. It would appear that a person could be too objective for effective performance, as well as too subjective. A too high score might mean that the person is so insensitive himself that he cannot appreciate the other fellow's possible sensitiveness; he may, consequently, hurt the other fellow unwittingly. A high O score should be balanced by a high T score. Although such a person may not feel sympathetic with the other fellow, he can be a sufficiently good observer to know the right thing to do and say in personal relationships. If low on A or G or F as well as on O, the person may suffer in silence. If low on O and F and high on A and G, there is likely to be trouble.

F - Friendliness

A high score may mean lack of fighting tendencies to the point of pacifism, or it may mean a healthy, realistic handling of frustrations and injuries. It may also mean an urge to please others: a desire to be liked. A low score means hostility in one form or another. At best, it means a fighting attitude. If kept under good control, in many situations this can be a favorable quality. Many of the higher-ranking executives who are regarded as successful may have a below-average F score. They may not always be the most pleasant persons to work with, but there are occasions when they can capitalize upon this disposition. It is likely that in positions where a supervisor must "battle" for the welfare of his group, a too strong tendency toward agreeableness would be less suitable than a good fighting spirit. Among the low-scoring individuals on F are those who like to dominate for the satisfaction it gives or for its compensatory value. In positions of authority, these persons are likely to stimulate friction, fear, and low morale in their associates and among their supervisees.

T - Thoughtfulness

Men who score on the introvert or thoughtful side of this trait have a small but distinct advantage in supervisory positions over the man who scores on the extravert side. The reason is that the extravert of this type is so busy interacting with his social environment that he is a poor observer of people and of himself. He is probably not subtle and may be lacking in tact. He dislikes reflection and planning.

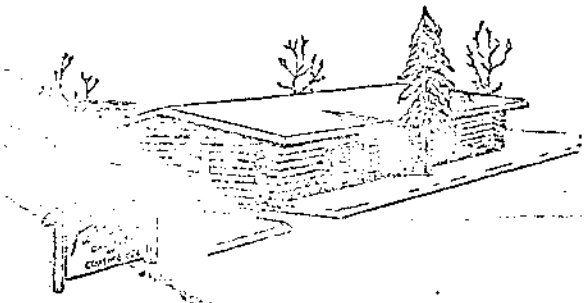
P - Personal Relations

Of all the scores, this one has consistently correlated highest with all criteria involving human relations. It seems to represent the core of "getting along with others" whether of the same or on a different level of organizational hierarchy. A high score means tolerance and understanding of other people and their human weaknesses. A low score indicates fault-finding and criticalness of other people and of institutions generally. The low-scoring person is not likely to "get along with others." So positive is the indication that it would seem to be a good rule not to appoint anyone to a supervisory position who has a C score below 6. This recommendation has been made from the first, and there has been little reason to change it. Above a score of 5, it would seem that the higher the P score the better, even to one of 9 and possibly 10, other things being equal.

M - Masculinity

On the positive side, a high raw score in this trait means that the person behaves in ways characteristic of men and that he is likely therefore to be better understood by men and to be more acceptable to them. If the M score is very high, it may mean that the person is somewhat unsympathetic and callous. He may, on the other hand, be attempting to compensate for some feminine tendencies or for feelings of weakness in traits other than M. The best supervisors are probably those who have their genuine masculine tendencies tempered with refinements and with just enough "motherly" attributes to give them feelings of responsibility toward those in their charge. Women who score toward the masculine end of this dimension may have had masculinizing experiences through long association with the opposite sex or they may be rebelling against the female role and attempting to play the male role.

APPENDIX B



Greater Fairbanks

CHAMBER OF COMMERCE

550 First Avenue
FAIRBANKS
ALASKA 99701

June 17, 1971

Mr. John W. Pope
Counseling Center
Box 13487, NTSU Sta.
Denton, Texas 76203

Dear Mr. Pope:

Thank you for your letter of June 2. I am sorry that we couldn't get an answer to you by the 5th of june, but our office is very busy during the summer months.

During the winter months, the schools in the area provide activities for the children. You may contact the North Star Borough School District for more information concerning this.

The community does not provide activities for the pre-school age children; however, the nursery schools and private pre-schools provide activities for the children. Again, the school district would be able to help you with this.

Whether or not small children are let out of doors during the winter depends entirely upon the parents and the temperature outside. The temperatures aren't always "intensely" cold; there are times you can participate in outdoor sports and the children can get outside.

I'm regrettful that this is all the information we have. I hope the school district will be able to furnish you with more information.

Sincerely,

Janet Standard

Janet Standard
Secretary

UNIVERSITY OF ALASKA
COLLEGE, ALASKA 99701

May 19, 1971

Dr. A. M. Conekin
University Counseling Center
North Texas State University
Denton, Texas 76203

Dear Dr. Conekin;

Enclosed is a "To Whom It May Concern" letter giving Mr. John Pope permission to utilize students in Psychology 101 classes as subjects for his proposed research topic.

Hope it meets with your needs.

Sincerely,

Kenneth K. Martin,
Head, Counseling Center

KKM/am

Encl.

UNIVERSITY OF ALASKA
COLLEGE, ALASKA 99701

May 19, 1971

TO WHOM IT MAY CONCERN:

Mr. John Pope has permission to utilize students in Psychology 101 classes as subjects for his proposed research topic during Fall Semester of the 1971-72 school year at the University of Alaska.

It is understood that this permission is contingent on his adhering to APA standards relating to the use of students in research and the APA standards of testing.

R. D. Brummett,
Asst. Professor, Psychology

R. G. Possenti,
Asst. Professor, Psychology

Kenneth K. Martin,
Head, Counseling Center

KKM/am

STATE OF ALASKA

WILLIAM A. EGAN, Governor

DEPARTMENT OF HEALTH AND WELFARE
-OFFICE OF THE COMMISSIONER
DIVISION OF ADMINISTRATIVE SERVICES

Statistics Section
POUCH H — JUNEAU 99801

March 24, 1971

Mr. John W. Pope
P. O. Box 13487
North Texas State University
Denton, Texas 76203

Dear Mr. Pope:

Information concerning distribution of immigrants to Alaska by state of origin does not exist. Indeed, the total number of permanent migrants must be inferred from births, deaths, and estimated population. A graph of approximate computations on this basis is enclosed. Persons entering central Alaska by car or private plane are counted by the customs station at Tok, but those entering by airline or stopping in southeast Alaska are not counted, nor are persons leaving.

The census of 1970 counted 302,173 persons in the State. Estimates of population in 1980 and 1990 are 375,000 and 450,000, respectively. These are quite uncertain, since population growth will depend upon growth of industry rather than effects of historical factors. Under certain circumstances, there could even be a decrease, as between 1955 and 1960 on the graph. Under other circumstances, the population in 1990 could be as much as 50% higher than the most probable estimate.

Detailed information about migrants to Alaska has interest for a considerable number of researchers and agencies, but so far its cost cannot be justified. Unless someone finds funds to mount a comprehensive survey by interview, no more data than those given are likely to be available.

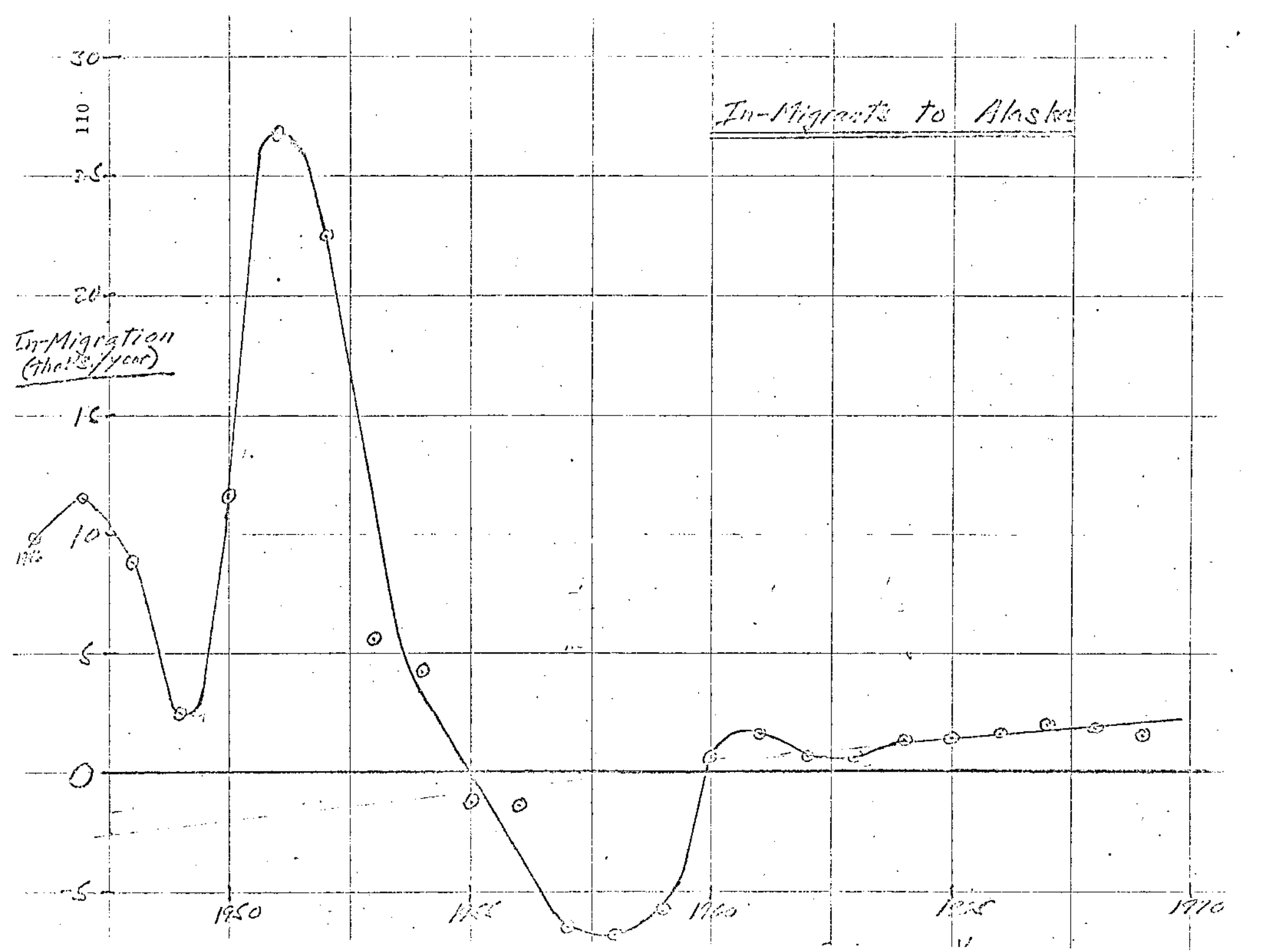
Sincerely,

Samuel S. West

Samuel S. West
Chief, Research and Statistics

SSW:jv

Enclosure


In-Migrants to Alaska
In-Migration (Thous/year)
30
25
20
15
10
5
0
-5
1950
1960
1970

APPENDIX C

SELECTION QUESTIONNAIRE

GROUP A

Instructions: You are asked to complete the following questions by inserting a check mark in the appropriate space as the question relates to you.

1. Race: Caucasian ___ Negro ___ Eskimo ___ Alute ___
   Other ___

2. Were you born or reared within polar regions? (Alaska)
   Yes ___ No ___

3. Have you ever lived within polar regions (Alaska) for a period of four consecutive months or longer? Yes ___ No ___

4. Were your parents born and reared within polar regions? (Alaska)
   Yes ___ No ___

5. Until your eighteenth birthday, were you under the influence of both parents within your home? Yes ___ No ___

6. Do you have any physiological handicaps such as loss of sight, hearing, or limb? Yes ___ No ___

7. Do you have any brothers or sisters, half-brothers or sisters, adopted brothers or sisters? Yes ___ No ___

   If yes, did they live in the same house? Yes ___ No ___

8. Were you born in any of the following years?
   1949 1950 1951 1952 1953 Yes ___ No ___

   If yes, please circle the year of your birth.

APPENDIX D

SELECTION QUESTIONNAIRE

GROUP B

Instructions: You are asked to complete the following questions by inserting a check mark in the appropriate space in the questions as they relate to you.

1. Race: Caucasian ___ Negro ___ Eskimo ___ Alute ___
   Other ___

2. Were you born and reared within polar regions? (Alaska)
   Yes ___ No ___

3. Have you ever lived within the continental United States for a period of four consecutive months or longer? Yes ___ No ___

4. Were either of your parents born and reared within polar regions (Alaska)? Yes ___ No ___

5. Until your eighteenth birthday, were you under the influence of both parents within your home? Yes ___ No ___

6. Do you have any physiological handicaps such as loss of sight, hearing, or limb? Yes ___ No ___

7. Do you have any brothers or sisters, half-brothers or sisters, adopted brothers or sisters? Yes ___ No ___

   If yes, did they live in the same home? Yes ___ No ___

8. Were you born in any of the following years?
   1949 1950 1951 1952 1953 Yes ___ No ___

   If yes, circle the year of your birth.

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