

A SURVEY AND ANALYSIS OF SELECTED BACKGROUND FACTORS  
INFLUENCING STUDENTS' DECISIONS TO ATTEND  
THE MANITOBA INSTITUTE OF TECHNOLOGY

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## ABSTRACT

A survey of recent literature revealed that much effort has already been expended trying to understand the selective process by which individuals are recruited into various occupational fields and/or into educational programs and institutions considered preparatory for these positions. However, the survey also revealed a paucity of research on the forces which shape students' decisions to enter a relatively new, but crucially important form of training--technological training at the post secondary level. To help fill this gap the present study was undertaken.

The problem on the study was two-fold: first, to isolate factors which characteristically influence post secondary educational decisions and second, to determine whether the selected factors were significantly related to students' decisions to attend the Manitoba Institute of Technology. Accordingly, a review of pertinent literature was made on the basis of which the following relationships were hypothesized:

1. Students' decisions to attend the Manitoba Institute of Technology were significantly influenced by the following endogenous factors in their backgrounds: sex and scholastic performance.

2. Students' decisions to attend the Manitoba Institute of Technology were significantly influenced by the

following exogenous factors in their backgrounds: home situation, religious affiliation, ethnic origin, citizenship status, social status, educational level of parents, perceived attitudes toward the decision of parents, peers and teachers, and community of residence.

Data secured by means of a questionnaire which was administered to first-year technology students in June, 1966 was organized into frequency distribution tables. Both the chi square test and direct comparison (this was used only when appropriate "comparable" data were not available) were used for determining whether the obtained results were significant. Where a relationship was found to be significant, successive cross-tabulations were undertaken. The purpose of this further analysis was to detect spuriousness and/or to "specify" the obtained relationship.

The results of the study suggested the following principal conclusions: first, that there was a strong possibility that the obtained results were applicable not only to decisions to attend the M.I.T., but also to choices in other forms of post secondary education; second, that subtle and pervasive barriers to entry to high status educational goals still persist; third, that possibly as a consequence of the lack of information about and negative attitudes against technical education, some counsellors and teachers may have thwarted legitimate aspirations of their students.

The conclusions indicated a need for further research in the following areas: replication of the present study to substantiate the validity of the findings; an investigation into the reasons for the under-representation of girls and farm youth at the M.I.T.; a survey to determine the extent to which school personnel consciously or unwittingly dissuade students from taking technology courses; research using designs which focus intensively on the nature and dimensions of specific factors; and the development and validation of attitude scales for accurate measurement of parental, peer, and teacher reactions toward studentss' career decisions.

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## CHAPTER I

### THE PROBLEM

#### I. NEED FOR THE STUDY

A survey of recent reports reveals that substantial effort has already been expended in trying to understand the selective process by which individuals are recruited into the various occupational positions and/or educational programs and institutions considered preparatory for these positions. One important by-product of these efforts is a fairly comprehensive model of vocational selection; another is a vast body of qualitative and quantitative material bearing on the relationships between a variety of vocational correlates and some specific career decisions. On the other hand, the survey indicates that there exists a need not only for further refinement of the choice-making model, but also for replication of certain studies rendering them applicable to local conditions.

Most notably, however, the survey indicates a need to fill a heretofore neglected area in research on vocational selection--studies into the determinants of decisions to pursue technological training at the post secondary level. Indeed, an exhaustive search yielded only a handful of studies



pertinent to this problem.<sup>1</sup> Considered in the light of the relative newness of the technological training at the post secondary level, this neglect is perhaps understandable; viewed in the light of the cruciality of the technological element in assuring continued industrial expansion, this neglect can no longer be countenanced.

Those who are obliged to cope either directly or indirectly with the demands of the technological era in Manitoba need up-to-date quantitative data on, among other things, the factors which influence students to enrol at the Manitoba Institute of Technology. Administrators require this kind of information for planning suitable programs of instruction and facilities; guidance counsellors need it for assisting students to specify and make adequate preparation for entry into careers which are compatible with the needs of the students and those of the larger society; teachers need it for guiding them to choose instructional procedures which best develop the particular talents of their students.

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<sup>1</sup>Leila Sussman and Gars Norman Levine, "The Entering Freshman at the Massachusetts Institute of Technology: Class of '61" (mimeographed) No publication date given. Cited in David Gottlieb and Charles E. Ramsey, The American Adolescent (Homewood, Ill.: The Dorsey Press, 1964), p. 150; and Ruth Rice, "The Social and Educational Background and Anticipated Career Prospects of a Group of Students in a College of Advanced Technology," The British Journal of Educational Psychology, (November, 1964), pp. 259-267.

## II. STATEMENT OF THE PROBLEM

In the 1965-66 school term 253 students enrolled in first-year technology courses at the Manitoba Institute of Technology. The problem of this study was to determine whether students' decisions to attend this institution were significantly related to two broad categories of factors in the students' backgrounds.

1. Are the following endogenous factors significantly related to the decision: sex and scholastic performance?
2. Are the following exogenous factors significantly related to the decision: home situation, religious affiliation, ethnic origin, citizenship status, social status, educational level of parents, perceived attitudes toward the decision of parents, peers and teachers, and community of residence?

## III. DEFINITION OF TERMS

Some of the major terms used in this study are defined below. Additional terms are explained in their appropriate contexts.

Citizenship status. This refers to the length of time, as measured by generation, that the student's family has enjoyed Canadian citizenship. A student whose father was the first male ancestor to have acquired Canadian citizenship or to have established permanent residence (i.e., five years or

more) will be regarded as having second generation status.

M.I.T. This abbreviation refers to the Manitoba Institute of Technology, an educational institution providing technological training at the post secondary level.

Socioeconomic level. The socioeconomic level is considered to be the position that a family occupies with reference to the prevailing average standards of material and cultural possessions.

Student. In the context of this study, a student is a high school graduate who had enrolled in one of the first-year technology courses at the Manitoba Institute of Technology in the 1965-66 school term.

#### IV. ASSUMPTIONS

The use of the questionnaire is based on three assumptions: that students will respond to the questions or statements without bias; that students will give accurate biographical information, and that sufficient assurance of anonymity will have been given so that teacher distribution and collection of the questionnaire will not limit student response.

#### V. LIMITATIONS

This study is limited to the investigation of the specified factors only; no claim is made as to the exclusiveness of these factors in influencing students'

decisions to attend the Manitoba Institute of Technology.

Generalizations arising from this study apply only to those students who completed the questionnaire.

## CHAPTER II

### RELATED LITERATURE

Students' decisions to attend the M.I.T. could be conceived as a post secondary career choice. To shed some light on the dynamics involved in such a process and to provide the rationale for the selection of hypotheses that were investigated, the following two-part review is offered.

#### I. THEORETICAL RATIONALE

##### A. VOCATIONAL CHOICE PROCESS: A CONCEPTUAL MODEL

How does an individual arrive at a post secondary educational decision? Is the choice a function of chance, or is it a product of other discrete and predictable factors in the individual's background? If the latter, do these factors inhere in the individual, or do they emanate from sources outside the individual? Do they operate singly, or in combination with other factors? Do they operate in a haphazard, or in a patterned manner?

A close scrutiny of literature relative to the vocational choice process reveals four fairly distinct theoretical approaches to these preliminary questions.

External factors approach. According to this school, vocational selection is a function of chance and/or other factors external to the chooser. Kalana suggested that a lack of information on which to base their decisions was

responsible for many persons' "simply drifting into jobs."<sup>1</sup> Miller and Form asserted that "accident" is a major determinant of vocational placement; however, they also averred that a combination of work experiences, observations and expectations has some bearing on the choice of vocation.<sup>2</sup> Finally, Gottlieb and Ramsey theorized that the vocational choosing is frequently not a rational process, "but rather a multitude of minor decisions which add up to a commitment of a particular level."<sup>3</sup>

Inherent factors approach. In contradistinction to the view that vocational selection is largely a function of exogenous forces, supporters of the "Inherent Factors" school asserted that the selection of occupations is mainly, or entirely, subject to endogenous influences. Hoppock believed that occupational choices are influenced by an individual's desire to be more comfortable, and more satisfied or less frustrated.<sup>4</sup> Vernon asserted that a person's occupation was

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<sup>1</sup>George Kalana, "Rational Behaviour and Economic Behaviour," Psychological Review, XL (1963), pp. 307-318.

<sup>2</sup>D.C. Miller and W.H. Form, Industrial Psychology (New York: Harper, 1964), pp. 576-578.

<sup>3</sup>David Gottlieb and Charles E. Ramsey, The American Adolescent (Homewood, Ill.: The Dorsey Press, Inc., 1964), p. 145.

<sup>4</sup>R. Hoppock and D.E. Super, "Vocational and Educational Satisfaction," cited in D.H. Friar and E.R. Henry, (eds.), Handbook of Applied Psychology (New York: Holt, Rinehart and Winston Inc., Vol. 1, 1950), pp. 126-134.

determined by basic drives.<sup>5</sup> Bell, meanwhile, perceived vocational selection in terms of "ego involvement."<sup>6</sup> Ginzberg observed that occupational selection can be understood by taking into account "early interests of a subconscious nature."<sup>7</sup>

Compromise approach. Another group of researchers have perceived vocational selection as a compromise process--a process entailing intricate inter-relationships between a variety of both exogenous and endogenous factors. To illustrate, Caplow suggested that occupational choosing can be understood in terms of two theoretical limits: individual characteristics, as determined by tests and observations, and father's occupation.<sup>8</sup> Carter also asserted that personal dynamics as well as environmental realities enter into career decisions--he hypothesized that vocational attitudes develop when an individual attempts to adjust to environmental conditions.<sup>9</sup>

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<sup>5</sup>Magdalen D. Vernon, "The Relationship of Occupation to Personality" British Journal of Psychology, XXXI (April, 1941), pp. 294-326.

<sup>6</sup>Hugh M. Bell, "Ego-Involvement in Vocational Decisions," Personnel and Guidance Journal, XXXVIII (May, 1960), pp. 732-736.

<sup>7</sup>Eli Ginzberg, Occupational Choice: An Approach to General Theory (New York: Columbia University Press, 1956), p. 21.

<sup>8</sup>Theodore Caplow, The Sociology of Work (Minneapolis, Minn.: The University of Minnesota Press, 1954), p. 235.

<sup>9</sup>Harold D. Carter, "The Development of Vocational Attitudes," Journal of Consulting Psychology, IV (January-February, 1940), pp. 185-191.

Haller identified several main categories influencing occupational choice: the chooser's personality (which includes one's conception of his ability and of the behaviour appropriate to his sex), immediate situation (which includes the accessibility of appropriate schools), the adequacy of financial support, and the expectations of parents, teachers and dominant culture.<sup>10</sup>

Developmental approach. Still another school of researchers have, likewise, explained vocational choice in terms of the interaction of exogenous and endogenous forces. However, the members of this group have been more explicit in the acknowledgement of the dynamic and complex nature of this interaction. For example, Blau and his associates hypothesized that occupational choosing is a "developmental process that extends over many years," during which span of time, the possible courses of action of the individual are continually being affected by two inter-related sets of factors--his valuations of the rewards offered by the different alternatives, and his appraisals of his chances of being able to realize each of the alternatives.<sup>11</sup>

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<sup>10</sup>Archibald O. Haller and Irwin W. Miller, "The Occupational Choice Process: A Sociological Review," cited in David Gottlieb and Jon Reeves, Adolescent Behaviour in Urban Areas: A Bibliographic Review and Discussion of Literature (East Lansing, Michigan: Michigan State University, 1962), p. 153.

<sup>11</sup>Peter M. Blau, et al, "Occupational Choice: A Conceptual Framework," cited in Neil J. Smelser and William T. Smelser (eds.), Personality and Social Systems (New York: John Wiley and Sons, Inc. 1964), p. 560.



Ginzberg espoused the "developmental" approach in still more explicit terms. He said that the vocational choice process is divisible into three fairly distinct stages, each subject to a characteristic set of endogenous and/or exogenous correlates. More specifically, in the "fantasy" stage (from infancy to approximately age eleven) and in the "tentative" stage (from age twelve to approximately age seventeen) interests, aptitudes and value orientations form the bases for the individual's vocational decision. On the other hand, in the "realistic" stage (from approximately age seventeen onward until a definite commitment to a particular kind of training or actual entry into a particular occupation had been made) externally localized factors such as the family's socioeconomic, occupational and educational levels, the accessibility of appropriate educational institutions and peer and other reference groups are more frequently the bases for vocational choice.<sup>12</sup>

Finally, Super and his associates perceived vocational selection as a continuous, patterned and generally irreversible process involving the interaction and integration of numerous psychological, socioeconomic and cultural forces. In each of the major stages, the chooser performs a characteristic "developmental task." In early adolescence he translates the

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<sup>12</sup>Ginzberg, op. cit., pp. 161-164.

concepts he has formed prior to this stage into occupational terms; in middle adolescence he examines his interests and abilities against a "backdrop of situational factors"; and in the final stage, after scrutinizing a multiplicity of factors emanating from within and without his person, he specifies a vocational preference.<sup>13</sup>

Conclusion. On the basis of this survey, it is postulated that post secondary educational decisions are the end-products of an on-going and fairly predictable interaction between a variety of endogenous and exogenous forces in the chooser's background.

#### B. FACTORS INFLUENCING CHOICE: THEORETICAL UNDERPINNINGS

In the foregoing section two categories of background forces that are believed to influence post secondary educational decisions were identified. What is the nature of these forces? Do they have a biological basis? Do they become manifest within, or apart from, the chooser's socioeconomic and cultural milieu?

##### Endogenous Factors

Sex. The phenomenon of vocational differentiation according to sex has been explained in both biological and sociological terms. Blanchard noted that the female's childbearing role, together with the relatively long

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<sup>13</sup>Donald E. Super, The Psychology of Careers: An Introduction to Vocational Development (Harper and Row, 1957), pp. 183-196.

interruptions associated with its fulfillment, exclude her from numerous occupations she might otherwise pursue. Nor, this same researcher averred, is the sex influence restricted to differences in genital apparatus. The female's proclivities towards concrete intuitive powers, receptiveness and reproductivity eminently suit her to engage in work requiring accuracy, devotion and personal attachment.<sup>14</sup> On the other hand, the male's aptitudes of inventiveness, aggressiveness and abstractlogical talents fit him to enter occupations requiring ingenuity, mobility and social detachment.

Furthermore, possibly as a consequence of the inherent genital and psychological peculiarities of the two sexes, society has assigned them different vocational roles; the fulfillment of these expectations also has implications for career decisions. For example, the satisfactory discharging of the "breadwinner" responsibility usually affords the male no alternative but to work throughout most of his lifetime; moreover, it behoves him to choose his work mindful of the standard of living the remuneration received from it will provide his family.<sup>15</sup> Neither of these considerations,

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<sup>14</sup>M. Blanchard et al, "Familial and Other Influences in Occupational Planning," (unpublished Master's Thesis, McGill University, Montreal, 1957), p. 26.

<sup>15</sup>Arthur T. Jersild, The Psychology of Adolescence (second edition; New York: The MacMillan Company, 1963), pp. 358-359.

however, need be of more than peripheral significance to the female.<sup>16</sup>

Mental capacity. Mental capacity is probably the most fundamental of all the endogenous factors influencing vocational selection. No matter how it is considered--whether in its inherent or cultivated, primary or secondary, general or specific aspects--it is the principal limiting factor determining both the amount of education and, concomitantly, the level and type of occupation one can realize, other factors permitting.

Among the variety of ways used by researchers to measure and describe this factor for purposes of predicting vocational entry, a student's record of achievement in a particular course in high school appears to be, despite several obvious limitations, both the most practical and reliable.<sup>17</sup> From the admission officer's point of view, the student's record of scholastic performance constitutes a concrete demonstration of a level of capability in a particular range of subjects. From the chooser's own standpoint, his academic record is also a useful criterion on which to base post high school

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<sup>16</sup>James Cowhig et al, Orientations Toward Occupation and Residence, Special State Bulletin, 428 (East Lansing, Michigan: Michigan State University, 1960), p. 24.

<sup>17</sup>Frank E. Jones, The Social Bases of Education (Toronto, Ontario: The Canadian Conference on Children, 1965), p. 9. The author points out that such a record may not only fail to detect the spurious influence of other factors, but it may also neglect other vocationally relevant gains, such as creativity and devotion to learning.

educational decisions. One reason for this is that the student is usually only vaguely, if at all, informed about other and more sophisticated measures of ability.<sup>18</sup> Moreover, Ginzberg, and his associates noted that an adolescent characteristically goes through a stage of appraising his potential success in fields he is considering in terms of his successes and/or failures in relevant school courses.<sup>19</sup>

### Exogenous Factors

Familial factors. The relationship between this constellation of variables and vocational choice has been explained in terms of several "inheritances." As genetic psychologists inform us, the individual inherits from his parents not only a given physical appearance, but also a given level of general intelligence as well as a set of specific aptitudes and sex.<sup>20</sup> How these characteristics may bear on career decisions has been discussed briefly in the foregoing section.<sup>21</sup>

In addition, the individual acquires from his parents

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<sup>18</sup>Dael Wolfe, "Educational Opportunity, Measured Intelligence and Social Background," cited in A.H. Halsey et al, Education, Economy and Society (New York: The Free Press of Glencoe, 1961), p. 224.

<sup>19</sup>Ginzberg, op. cit., p. 163.

<sup>20</sup>Raymond G. Kuhlén and George C. Thompson, (eds.), Psychological Studies of Human Development (second edition; New York: Appleton - Century - Crofts, 1963), pp. 286-310.

<sup>21</sup>Supra, pp. 11-14.

a cluster of characteristics which derive from the parents' memberships in particular ethnic, religious and socioeconomic groups; these "inheritances" affect the process of socialization --a process in which biological potentialities are transferred into various vocationally relevant behaviour patterns.<sup>22</sup>

"Achievement Syndrome" is one such vocationally relevant characteristic which an individual "inherits" from his family. According to Rosen this complex consists of three components and is a product of the kind of training a child receives in the various stages of his development. If in the emotional and un verbalized stages of his development the child is encouraged to perform at high standards and given ample opportunities to make decisions, he will likely acquire a high level of "achievement motivation." Further, if at the verbalized stage the child is also taught to value and seek to attain such attributes as power, prestige and wealth, he will probably acquire two other components of the specified syndrome--"value orientations" and "educational and occupational aspirations." Together these "inheritances" will not only encourage the child to excel but will also guide his "excelling" toward desirable (i.e., high) occupational goals.<sup>23</sup>

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<sup>22</sup>Smelser and Smelser, op. cit., p. 567.

<sup>23</sup>Bernard C. Rosen, "The Achievement Syndrome: Psycho-Cultural Dimensions of Social Stratification," American Sociological Review, Vol. XI, No. 2 (April, 1956), pp. 203-211.

Language development is another "inheritance" which is a function of parental group affiliation and which powerfully conditions career goals. According to Bernstein, the conditioning power of this variable derives chiefly from the fact that it is the means by which the diverse influences of the child's sociocultural environment are synthesized and learned. If, as is most frequently the case in lower class families, the child's environment is impoverished, his language development will likely be restricted to responding to concrete, immediate and particularized properties of objects. If, on the other hand, as is more characteristic of middle class families, the child's environment is richer, more complex, he will additionally learn to respond to the abstract, categorical and relational properties of things.<sup>24</sup> These differences in the quality of language development, according to Davis, help to account for distinct class differences in the mastery of various school curricula.<sup>25</sup>

According to several writers, "climate of success" is still another vocationally relevant "inheritance" which is related to the kinds of memberships enjoyed by the parents. Jones and Rosen, for example, contended that parents who had

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<sup>24</sup>Basil Bernstein, "Social Class and Linguistic Development: A Theory of Social Learning," cited in Halsey et al, op. cit., pp. 288-314.

<sup>25</sup>Allison Davis, Social Class Influence Upon Learning (Cambridge: Harvard University Press, 1950), pp. 78-83.

themselves secured entry into educational and occupational elites are usually better enabled and more disposed to provide their children with material and moral encouragement than are parents who had realized these same goals to lesser degrees.<sup>26</sup> Kahl, approaching the relationship from the opposing direction, offered a similar observation. He hypothesized that parents who had emigrated from societies or regions in which opportunities for success were strictly curtailed by social structure or in which extensive temporal acquisitions were discouraged for religious or other similar reasons tended to transmit habits of resignation and fatalism to their children. Such habits, this writer asserted, are generally more conducive to the denigration of, rather than to the attainment of, high status occupational goals.<sup>27</sup> Finally, Clark claimed that an impoverished family milieu (economic, social and cultural) has an adverse effect upon the individual's chances for realizing his potential in yet another way; such circumstances militate against the formation of a healthy (i.e. positive) self-image.<sup>28</sup>

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<sup>26</sup>Jones, op. cit., p. 30; and Rosen, op. cit., pp. 203-211.

<sup>27</sup>Joseph Kahl, "Motivation and Education," cited in Robert R. Bell, (ed.), A Sociology of Education - A Source Book (Homewood, Illinois: The Dorsey Press, Inc. 1962), pp. 147-166.

<sup>28</sup>Kenneth B. Clark, "Education Stimulus of Racially Disadvantaged Children," cited in A. Harry Passow, Education in Depressed Areas (New York: Columbia University Teachers' College Press, 1963), p. 148.



Non-familial factors. Socialization, however, is not confined to the home; associations with peers and teachers constitute other sources whence the individual acquires vocationally relevant behaviour patterns. Nor, as Smelser and Smelser remind us, are these patterns independent of the neighbourhood in which the individual's family resides.<sup>29</sup>

The relationship between peer group affiliation and career decisions has been variously explained. Coleman stated that such relationships derive from the ill-defined position of the adolescent in contemporary North American society; this predicament frustrates the individual and impels him to seek entry into a peer subculture.<sup>30</sup> According to another writer, peer groups are manifestation of pervasive psychological needs for approval and acceptance. If the satisfaction of these needs is not forthcoming from the home or school, a situation most frequently found among children of broken or lower class homes, the individual will invariably seek membership in a subculture which affords him gratification of these needs.<sup>31</sup> Still another writer explained the peer group phenomenon in terms of two kinds of relationships, both

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<sup>29</sup>Smelser and Smelser, op. cit., pp. 567-568.

<sup>30</sup>James S. Coleman, The Adolescent Society: The Social Life of the Teenager and Its Impact on Education (New York: The Free Press of Glencoe, 1962), pp. 311-313.

<sup>31</sup>David and Pearl Ausubel, "Ego Development Among Segregated Negro Children," cited in Passow, op. cit., p. 112.

of which, he believed, are requisites for successful socialization. The first type of relationship, that between unequals, is inevitably first laid down through identification with parents. This type of relationship is basic to the individual's acquisition of absolute standards of conduct. The second kind of relationship, that between generation equals, meanwhile, provides the individual with a framework for relative standards of conduct.<sup>32</sup>

Teacher influence upon career decisions has been explained in terms of several correlates. Christiansen et al claimed that the discipline a teacher imposes on the student often affects not only the efficiency of the learning experience but also the general attitude of the student toward education.<sup>33</sup> Both Haller and Bertrand claimed that the teacher's influence stems from his instrumentality (this instrumentality derives from his access to a vast and complex repertory of rewards and punishments) in affecting the student's self-image: if it is positive, it impels the student to seek high status goals; if it is negative, it "traps" the student in a low-grade pattern, causing him to develop modest

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<sup>32</sup>Jean Piaget, The Moral Judgement of the Child (New York: Collier Books), 1962, cited in Jones, op. cit., p. 6.

<sup>33</sup>John R. Christiansen et al, Educational and Occupational Aspirations of High School Seniors in Three Central Utah Counties, Social Science Research Bulletin No. 1 (Washington, U.S.A. Department of Agriculture, June, 1962), p. 9.

aspirations.<sup>34</sup> Gottlieb and Ramsey argued that the teacher's influence stems from the opportunities his position affords him to proffer students who are desperate for acceptance subsidiary outlets for status.<sup>35</sup> Finally, Super,<sup>36</sup> and Ausubel and Ausubel perceived teachers as parent substitutes, the latter averring that this phenomenon would be particularly common in instances where, for such reasons as broken marriages and inter-generational stresses, the children had become desatellized from their parents.<sup>37</sup>

The relationship between career decisions and community of residence has been explained in terms of three major correlates. Gottlieb and Ramsey believed that the relationship between these two variables is a function of the "life experiences" afforded by the various types of communities. These writers hypothesized that, because urban communities generally provide greater opportunities for intellectual stimulation, its students are encouraged to

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<sup>34</sup>Archibald D. Haller, Rural Youth Need Help in Choosing Occupations, Circular Bulletin 235 (East Lansing: Michigan State University, 1963), p. 3; and Alvin L. Bertrand, "School Attendance and Attainment: Function and Dysfunction of School and Family Social System," Social Forces, XL, (1962), pp. 228-233.

<sup>35</sup>Gottlieb and Ramsey, op. cit., p. 86.

<sup>36</sup>Super, op. cit., p. 528.

<sup>37</sup>David and Pearl Ausubel, cited in Passow, op. cit., p. 112.

aspire to occupations necessitating longer educational preparation. On the other hand, because residents of rural communities tend to regard work as a positive virtue, their children are encouraged to enter the workaday world as soon as possible.<sup>38</sup> In a more recent work, however, Hendriks declared that rural and urban people are "tending more and more to share mutually interdependent and similar sets of life experiences."<sup>39</sup>

Stanley observed that the physical situations of the families of rural areas differed from those of the families of the urban communities. He pointed out that the home in rural areas serves not only as a site for family relationships but also as a base for the family's business operations, whereas the home in the urban community rarely combines the two functions. These differences help to explain why rural boys evince a greater tendency to follow their father's occupation than do urban boys.<sup>40</sup>

Other writers have described how the socioeconomic and cultural characteristics of the communities affect both the

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<sup>38</sup>Gottlieb and Ramsey, op. cit., pp. 74-76.

<sup>39</sup>Donald G. Hendriks, "Rural People's Understanding of ARDA and Its Purposes," (unpublished Master's Thesis, The University of Guelph, Guelph, 1966), p. 4.

<sup>40</sup>William O. Stanley (ed.), Social Foundations of Education (New York: Henry Holt and Company, 1956), pp. 111-112.

floors and the ceilings of their residents' ultimate educational achievements. Rogoff postulated a relationship between the social class composition of a community and the informal and formal provisions it makes for the education of its residents. She believed that, because of their greater wealth, middle class suburbs generally foster higher aspirations and provide greater opportunities for the actualization of these aspirations than do lower class communities.<sup>41</sup> Along similar lines, Geschwind and Ruttan asserted that the degree of success which an individual achieves in expressing his social and economic aims is associated with the opportunities and impediments he experiences in his community of residence.<sup>42</sup> Finally, Davis stated that rural people's desire to improve their community is closely related to the economic status of that community.<sup>43</sup>

Conclusion. The foregoing review, has shown that the endogenous influences derive primarily from biological sources, while the endogenous influences are products of interactions,

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<sup>41</sup>Natalie Rogoff, "Public Schools and Equality of Opportunity," Journal of Educational Sociology, Vol. 33, No. 36 (1960), pp. 252-259.

<sup>42</sup>R.D. Geschwing and V.W. Ruttan, Job Mobility and Migration in a Low-Income Rural Community, (Purdue University), cited in Henriks, op. cit., p. 13.

<sup>43</sup>Lloyd H. Davis, Motivation of Local Initiative and Self-Reliance in Rural Area Development, cited in Henriks, ibid., p. 15.

within the context of socialization, between two or more of the following kinds of forces: biological, psychological, cultural and socioeconomic.

## II. EMPIRICAL RATIONALE

In the preceding section the theoretical rationale of the background factors which are believed to influence vocational decisions was presented. But, do empirical findings bear out the existence of these factors? Have the factors been isolated and subjected to quantitative analysis? If so, how were they related to the various occupational goals?

With a view to providing a guide for the formulation of the research hypotheses for this study, a review of literature bearing on the questions asked in the above paragraph is given. The non-Canadian research (in practically all instances this will mean American research) will be reviewed first; then the Canadian research will be reviewed. Specific data will be cited only in instances where they appear to have particular relevance for the present study.

Although the factors selected for review will be discussed separately, it is recognized that they may interact in varying ways in the process of vocational development.

### Endogenous Factors

Sex. Quantitative data generally corroborates the theories explaining occupational differentiation according to sex. In a study of career preferences and fields of entry of

girls, Powell and Bloom reported the following results: the three fields most often preferred by girls were office work (21 percent), teaching (15 percent) and nursing (13 percent); as far as actual work plans were concerned, 28.8 percent planned to do clerical work, 16.9 percent to teach, 12.8 percent to take up nursing and 5.5 percent to become housewives.<sup>44</sup> Pavolko, in a recent study involving a Canadian sample, also found girls to evince a definite preference for service-oriented fields.<sup>45</sup> In a similar study, Rosenberg discovered that girls who depart drastically from characteristic patterns, i.e., those who place career above family, tend to have value systems similar to those of males.<sup>46</sup>

Mental capacity. The proposition that there is a clear, albeit imperfect, relationship between mental capacity and occupational choice has been firmly substantiated in both the United States and Canada. Perhaps the most representative study insofar as comprehensiveness of sample is concerned was that undertaken by Stewart in the United States. Comparing

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<sup>44</sup>Marvin Powell and U. Bloom, "Development of and Reason for Vocational Choices of Adolescents Through the High School Years," Journal of Educational Research, Vol. 56, (1962), pp. 126-133.

<sup>45</sup>Ronald M. Pavolko and David R. Bishop, "Socioeconomic Status and College Plans: A Study of Canadian High School Students," Sociology of Education, Vol. 39, No. 3, (Summer, 1966), pp. 288-298.

<sup>46</sup>Morris Rosenberg, Occupations and Values, (New York: The Free Press of Glencoe), 1957, cited in Gottlieb and Ramsey, op. cit., p. 150.

Army General Classification Tests (A.G.C.T.) scores of army personnel with their occupations, Stewart demonstrated that the average intelligence of members of different occupations may be arranged in a hierarchy according to these averages. She further showed that there is much overlapping in the range of scores between the different occupational groups.<sup>47</sup> In Canada, following an extensive review of the factors bearing on educational behaviour, Jones reached an essentially similar conclusion--that in this society there is a level of intelligence and education commensurate with a level of occupations.<sup>48</sup>

Curriculum followed in high school. Experience with particular school subjects has been found to influence vocational choice. In his state-wide study, Berdie showed that students taking "college preparatory" courses generally planned to attend university, whereas those taking "commercial" courses tended to plan on enrolling in business colleges.<sup>49</sup> Cooley asserted that "the career choices of British students were also evidently influenced in many instances by school

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<sup>47</sup>N. Stewart, "A.G.C.T. Scores of Army Personnel Grouped by Occupations," Occupations, No. 26, (1947), pp. 5-41.

<sup>48</sup>Jones, op. cit., p. 9.

<sup>49</sup>Ralph F. Berdie, After High School - What? (Minneapolis, Minnesota: The University of Minnesota Press), 1954, pp. 130-155, 169.



course experience."<sup>50</sup> Likewise, Wilson found that English secondary students frequently named preferred courses in school as a reason for their occupational selection.<sup>51</sup>

### Exogenous Factors

"Home Situation". The findings on the relationship between this factor and the educational and occupational behaviour of youth are both scant and inconsistent. Dynes et al found unsatisfactory interpersonal relations in the family of orientation to be directly associated with higher occupational aspiration levels.<sup>52</sup> On the other hand, Siemens found that while a slightly higher proportion of high school boys from "broken" homes aspired to university, "home situation" had no significant bearing on high school girls' educational aspiration levels. Nor did this factor appear to be significantly related to occupational aspirations of these students.<sup>53</sup> McClelland and his associates concluded from an

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<sup>50</sup>W.W. Cooley, "Current Research on the Career Development of Scientists," Journal of Counselling Psychology, Vol. 11, (1964), pp. 88-93.

<sup>51</sup>Robert C. Wilson and William R. Morrow, "School and Career Adjustment of Bright High-Achieving and Under-Achieving High School Boys," Journal of Genetic Psychology, No. 101, (1962), pp. 91-103.

<sup>52</sup>Russel Dynes et al, "Levels of Occupational Aspiration: Some Aspects of Family Experience as a Variable," American Sociological Review, 21, (1956), pp. 212-214.

<sup>53</sup>Leonard B. Siemens, The Influence of Selected Family on the Educational and Occupational Aspiration Levels of High School Boys and Girls, No. I, (Winnipeg, Manitoba: University of Manitoba, June, 1965), p. 72.

intensive study of thirty male college students that "felt lack of love" was positively associated with high achievement motivation. However, in applying the same study to high school boys, these researchers found the reverse to obtain.<sup>54</sup>

Chabossol, in an Alberta study, also reported that most underachievers believed they had been rejected by one or both of their parents.<sup>55</sup>

Religious affiliation. On the basis of several studies, religion appears to bear on some post high school plans. Berdie cites two studies which substantiate this view. The more comprehensive of these is the American Council of Education (A.C.E.) study, according to which 68 percent of high school graduates coming from Jewish, 36 percent coming from Protestant and 25 percent coming from Catholic homes applied for admission to college. Stetter's smaller scale study fully corroborates the A.C.E. findings; 87 percent of the Jewish, 63 percent of the Protestant and 57 percent of the Catholic high school graduates of Connecticut applied for admission to college.<sup>56</sup>

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<sup>54</sup>David McClelland et al, The Achievement Motive (New York: Appleton - Century - Crofts, 1953), p. 279.

<sup>55</sup>D.J. Chabassol, "Correlates of Academic Under-Achievements in Male Adolescents," Alberta Journal of Educational Research, 9 (1959), pp. 130-146.

<sup>56</sup>Berdie, op. cit., p. 20.

In Canada, Siemens, investigating the relationship between religious background and educational aspirations came to conclusions essentially similar to those reached in the United States. Among the male high aspirers, the Protestants outnumbered the Catholics and Orthodox by a ratio of approximately three to two. Likewise, the girls' educational aspirations were significantly, though not to the same degree, related to their religious origins.<sup>57</sup> Furthermore, Siemens and Jackson have provided data which indicates that religious differences persist insofar as post high school plan fulfillment is concerned. They reported, first, that while 58 percent of the Protestant youth realized their plans to attend university, only 23 percent of the Catholic youth did so; second, 47 percent of the Protestants enrolled in non-university courses which were considered to constitute the fulfillment of their plans, whereas 33 percent of the Catholics enrolled in such courses.<sup>58</sup>

Ethnic affiliation of parents. The findings respecting this factor's influence upon students' educational and occupational behaviour are, on the whole, inconclusive. Marshall and his associates, in a study of rural youth in

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<sup>57</sup>Siemens, op. cit., p. 146.

<sup>58</sup>Leonard B. Siemens and J.E. Winston Jackson, Educational Plans and Their Fulfillment: A Study of Selected High School Students in Manitoba, No. 2, (Winnipeg: Faculty of Agriculture and Home Economics, University of Manitoba, September, 1965), p. 36.

Wisconsin, found that "the heavier the proportion of German, Belgian, Polish and Swiss, the lower the school attendance." This same group, approaching this question from the point of view of attitudes toward high school education, offered the following observations: First, that, as a group, Anglo-Americans were more favorably disposed toward high school education than were persons of mixed ethnic backgrounds; second, that ethnicity was found to be associated with positive attitudes toward high school only among individuals of high socioeconomic status who themselves had attended high school.<sup>59</sup> Further, from the point of view of immediate post high school plans, Berdie found that bilingualism had a slight negative influence on college plans and slightly increased the probability that the student would plan on working after he had graduated from high school.<sup>60</sup>

Three Manitoba studies relevant to the relationship between ethnicity and educational behaviour were located. In the earliest of these, Reid demonstrated that there were definite ethnic differences insofar as both illiteracy levels and attendance at secondary schools, teacher training institutions and university are concerned. The Anglo-Saxons

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<sup>59</sup>D.G. Marshall, W.H. Sewell and A.O. Haller, "Factors Associated with High School Attendance of Wisconsin Farm Youth," Rural Sociology, 18, (1953), pp. 257-260.

<sup>60</sup>Berdie, op. cit., p. 139.

and Hebrews had the lowest illiteracy rates, and exceeded their quotas in the institutions of higher learning. The Germans, Scandinavians and French had the second lowest illiteracy rates and generally reached their attendance quotas at the specified institutions. The Central Europeans had the highest illiteracy levels and generally failed to reach their attendance quotas.<sup>61</sup>

In the second of these studies, Siemens observed that in general, the Icelandic youth had the highest educational and occupational aspiration levels; British and German youths had the second highest and the Ukrainian and Russian youths had the lowest educational and occupational levels. However, in no instances was the percentage difference between ethnicity and the selected educational variables statistically significant.<sup>62</sup> Nor, according to a third and related study, was there any statistically significant relationship between ethnic origin and university plan fulfillment. On the other hand, non-university plan fulfillment was only statistically related to ethnic origin.<sup>63</sup>

Socioeconomic level. There is ample evidence that students from families of higher socioeconomic levels tend to

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<sup>61</sup>Ernest Harvey Reid, "A Comparative Study of Secondary and Higher Educational Interests Among the Different Racial Groups of Manitoba (unpublished Master of Education Thesis, University of Manitoba, Winnipeg, 1937), p. 55.

<sup>62</sup>Siemens, op. cit., p. 73.

<sup>63</sup>Siemens and Jackson, op. cit., p. 37.

score higher on various tests of academic ability. In the United States, Neugarten, and Hollingshed reported direct relationships between socioeconomic status and scores attained on I.Q. tests,<sup>64</sup> while Mueller and Mueller and Warner and his associates found that students of the higher classes tended to monopolize the upper ranks in scholastic performance. In Britain, Jahoda, using findings from a vast array of research undertakings in this field, reported equally strong associations between class and ability levels.<sup>65</sup> Canadian research on this topic is scant. Nevertheless, as affirmed by Porter, there is enough research from other industrialized societies to suggest that such associations between class and ability may be characteristic of all industrialized societies.<sup>66</sup>

Students' valuations of achievement and education were

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<sup>64</sup>Bernice L. Neugarten and Robert J. Havighurst, Society and Education, (2nd Ed.) (Boston: Allyn and Bacon, Inc., 1962), p. 223; and August B. Hollingshed, Elm Town's Youth (New York: John Wiley and Sons, 1949), pp. 174-175.

<sup>65</sup>Kate H. Mueller and John H. Mueller, "Class Structure and Academic and Social Success," Educational and Psychological Measurements, 13 (1953), pp. 486-496; W. Lloyd Warner, Robert J. Havighurst and Martin Loeb, Who Shall Be Educated? (New York: Harper and Bros., 1944), p. 81; and Gustav Jahoda cited in Ruth Rice, "The Social and Educational Background and Anticipated Career Prospects of a Group of Students in a College of Advanced Technology", British Journal of Educational Psychology, XI (1964), p. 267.

<sup>66</sup>John Porter, The Vertical Mosaic: An Analysis of Social Class and Power in Canada (Toronto: University of Toronto Press, 1965), p. 197.

also found to vary according to the class positions of their parents. The American researchers, Morrow and Wilson, and Youmans have provided evidence in support of this generalization.<sup>67</sup> Other researchers, however, have provided reasons for regarding the reported findings with caution; Coster and Simpson for example, found that the difference in the valuations of education between the several income groups were not large enough to be statistically significant, while Sewell observed that when aspirations and expectations were distinguished in the questionnaire, the social class differences in aspirations are smaller than the class differences in expectations.<sup>68</sup>

In Canada, Siemens came to a conclusion similar to that of his American counterparts--that socioeconomic status is positively and strongly related to students' post high school career aspirations and expectations.<sup>69</sup> However, in a subsequent study, Siemens and an associate found no significant

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<sup>67</sup>Morrow and Wilson, op. cit., pp. 91-103; and E. Grant Youmans, The Educational Attainment and Future Plans of Kentucky Rural Youth, Kentucky Agricultural Experimental Station Bulletin, (1959), p. 644.

<sup>68</sup>John K. Coster, "Attitudes Towards School of High School Pupils from Three Income Levels," Journal of Educational Psychology, 49 (1958), pp. 61-66; Richard L. Simpson, "Parental Influence, Anticipatory Socialization and Social Mobility," American Sociological Review, 27 (1962), pp. 517-522; and William H. Sewell, The Educational and Occupational Perspectives of Rural Youth, (Washington, D.C.: National Committee for Children and Youth, 1963), Report 23, p. 4.

<sup>69</sup>Siemens, op. cit., pp. 61-62.

relationship between socioeconomic standing and the fulfillment of educational plans.<sup>70</sup>

Socioeconomic status has also been found to be a potent factor in determining the duration of the students' stay in school. On the basis of a review of studies of social class undertaken in the United States, Warner and his associates concluded that in all communities most of the students completing their final high school year are drawn principally from the upper classes. Further, these same researchers have reported that virtually all the children from the two upper classes go to university, while those of the two bottom classes rarely complete high school.<sup>71</sup> Brookover and Gottlieb, however, have questioned the validity of these findings on two principal grounds: first, they criticize the overemphasis on this factor in accounting for many variations in educational behaviour, including the "drop-out" and "stay-in" phenomena; second, they deprecate the lack of attention that was given to making clear what there is in the students' socioeconomic backgrounds which would lead to the reported variations in educational behaviour.<sup>72</sup>

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<sup>70</sup>Siemens and Jackson, op. cit., pp. 16-19.

<sup>71</sup>Warner, Havighurst and Loeb, op. cit., pp. 51-54, 66.

<sup>72</sup>W.B. Brookover and David Gottlieb, "Social Class and Education," cited in W.W. Charters, Jr. and N.R. Gage, (eds.) Readings in the Social Psychology of Education (Boston: Allyn and Bacon, 1963), pp. 3-11.



Canadian research findings on this question practically parallel those cited above. According to an Ontario study of dropouts among students between grades seven and twelve, 29 percent of the boys and 20 percent of the girls belonging to families of "above-average" economic circumstances, in comparison to 78 percent of the boys and 74 percent of the girls belonging to families of "below-average" circumstances failed to complete high school.<sup>73</sup> In The Social Bases of Education, Jones cites several other studies conducted in specific, widely scattered regions in Canada which fully confirm the generalization that children of higher socioeconomic status parents are over-represented while those of parents of lesser means, are under-represented in high schools and colleges.<sup>74</sup>

That the several curricula tend to draw differentially from the social class has been substantiated by many researchers. Summarizing class studies in five widely scattered communities in the United States, Warner and his associates reported a general tendency for the proportion enrolled in college preparatory courses to decrease from the highest to the lowest classes. These workers also showed that, though the actual proportions differed from community to community, the rank

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<sup>73</sup>Your Child Leaves School; Report No. 2 (Toronto: Canadian Research Committee on Practical Education, 1948), cited by Jones, op. cit., p. 13.

<sup>74</sup>Jones, op. cit., pp. 11-17.

order remained the same. More recent studies by Davie, Miller and Stephanson confirm Warner's conclusions.<sup>75</sup>

Father's occupational status. The prestige ratings of the father's occupation have been found to bear powerfully on the educational and occupational choices of children. Sewell, Haller and Strauss, in perhaps the most rigorously controlled and comprehensive study in its field, have concluded that the relationship between the level of aspirations and parental occupational status, with intelligence controlled, holds for both sexes and for both educational and occupational aspirations.<sup>76</sup> Rogoff concluded that, although the majority of the sons do not enter the same occupation as their fathers, they are nevertheless more likely to enter their father's occupation than any other. Jenson and Kirchner concur with Rogoff, indicating that sons tend to follow the general type of occupation their fathers had engaged in.<sup>77</sup> When they do not

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<sup>75</sup>Warner, Havighurst and Loeb, op. cit., pp. 61-62; J.S. Davie, "Social Class Factors and School Attendance," Harvard Educational Review, (1953), 23, pp. 175-185; Jerry L.L. Miller, "Occupational Choice and the Educational System," Journal of Educational Sociology, 34:3 (1960), pp. 117-126; and Richard M. Stephenson, "Stratification, Education and Occupational Orientation: A Parallel Study and Review," British Journal of Sociology, 9 (1958), pp. 42-55.

<sup>76</sup>William H. Sewell, A.O. Haller and M.A. Strauss; "Social Status and Educational and Occupational Aspirations," American Sociological Review, 22 (1957), pp. 67-73.

<sup>77</sup>Natalie Rogoff, op. cit., pp. 252-259; and P.G. Jenson and W.K. Kirchner, "A National Answer to the Question," 'Do Some Follow Their Fathers' Occupations'?" Journal of Applied Psychology, 39 (1955), pp. 419-421.

follow the fathers' occupations, Kroger and Loutit point out, the sons tend, in general, to enter an occupation of higher status than that of their fathers (provided their father's status is not already at the top of the occupational "totem pole").<sup>78</sup>

In Canada, Porter noted that the length of school attendance is in large measure, a function of the father's occupational level. His data show that of the children between fourteen and twenty-four, those whose fathers belong to the two higher occupational classes tend to remain in school in approximately twice as many instances as is true for the children whose fathers are employed in the two lowest occupational classes. Siemens' data also suggest that the educational and occupational aspirations of both sexes are positively related to the fathers' occupational status.<sup>79</sup>

Educational level of parents. In general, the parents' educational level appears to be closely related to students' post high school vocational plans. Sewell, Haller and Strauss have shown that approximately twice as many students coming from families ranking "high" in educational achievement had

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<sup>78</sup>R. Kroger and C.M. Loutit, "The Influence of Father's Occupation on the Vocational Choices of High School Boys," Journal of Applied Psychology, 19 (1935), pp. 202-212.

<sup>79</sup>Porter, op. cit., pp. 103-129; and Siemens, op. cit., pp. 132-133.

college aspirations as was the case for students from parents of lesser educational attainment.<sup>80</sup> Further, Berdie found that the occupational aspiration levels of children varied, though not with complete consistency, with the modal education of their parents. To illustrate, students planning to "get jobs after high school", had parents whose modal education was less than grade eight; those (in this case, girls) planning to "go to business college" had parents whose modal level was "completion of grade eight"; students aspiring to college had parents whose modal level was "high school graduation".<sup>81</sup>

The findings from studies undertaken in several regions in Canada generally confirm American findings. Both Kaill and Flemming found that Ontario students of "high" achievement levels were born of parents having high educational attainments. Similarly, Larson, in an Edmonton study, found that 55 percent of the youth having at least one parent with a university degree completed grade twelve; whereas, only 35 percent of the youth whose parents belonged to the "unskilled" category completed

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<sup>80</sup>Sewell, Haller and Strauss, op. cit., pp. 67-73.

<sup>81</sup>Berdie, op. cit., pp. 128-129, 138-139, 168.

this level of education.<sup>82</sup> Most recently, Siemens, in a Manitoba study, found highly significant relationships between high educational aspiration levels and parental education. In a follow-up study this same researcher and his associate reported results which demonstrate even more dramatically the strong relationship between the parental education level and children's educational aspiration levels. Approximately twice as many of the students whose fathers and mothers had achieved "above high school" standing had high educational aspiration levels as was the case for students whose parents had reached "public school" standing.<sup>83</sup>

Parental encouragement. Studies of parental influence on students' occupational decisions may be placed into three categories. Those of Slocum, Watenburg, and Susman and Levine suggest that "more than any other factor, the ideas of parents

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<sup>82</sup>Robert Kaill, "An Inquiry Into the Relationship Between the Occupational Level of Parents, Their Attitude Toward Education and the Educational Achievement of the Child" (unpublished Master's Thesis, University of Guelph, Guelph; 1963), p. 20; W.G. Fleming, Atkinson Study of Utilization of Student Resources, Report No. 1, Background and Personality Factors Associated with Educational and Occupational Plans and Careers of Ontario Grade 13 Students (Toronto, Ontario: College of Education, 1957), p. 24; and H.L. Larson, "The Five-School Project Drop-Out Study," Alberta Journal of Educational Research, Vol. 4, No. 4 (1958), pp. 212-215.

<sup>83</sup>Siemens, op. cit., p. 67; and Leonard B. Siemens and Leo Driedger, No. 4, Some Rural-Urban Differences Between Manitoba High School Students (Winnipeg, Manitoba: University of Manitoba, Faculty of Agriculture and Home Economics, December, 1965), p. 51.

influence youth in their choice of vocations."<sup>84</sup> Those of a second group, namely, those of Bordua and Kahl in the United States and Flynn and Siemens in Canada suggest that parental influence is directly related to children's career decisions.<sup>85</sup> Meanwhile, those of the third group suggest that this factor is functionally related to the parents' cultural and socioeconomic background. In this connection, Simpson found that 53 percent and 43 percent of ambitious middle and lower class boys respectively reported parental advice to aspire to high prestige occupations as compared to 21 percent and 16 percent among unambitious middle and lower class boys.<sup>86</sup>

Peer group affiliation. On the basis of research located, it appears that peer group affiliation bears rather

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<sup>84</sup>Walter L. Slocum, "Occupational and Educational Plans of High School Seniors from Farm and Non-Farm Homes," (Washington, D.C.: Agricultural Experiment Stations Institute of Agricultural Sciences Bulletin 565, 1956), p. 36; William W. Watenburg, The Adolescent Years (New York: Harcourt, Brace and World, Inc., 1955), p. 359; and Leila Sussman and Gars Norman Levine, "The Entering Freshman at the Massachusetts Institute of Technology: Class of '61" (Mimeographed) No publication date given. Cited in Gottlieb and Ramsey, op. cit., p. 150.

<sup>85</sup>David J. Bordua, "Educational Aspirations and Parental Stress on College," Social Forces, 38 (1960), pp. 262-269; J.A. Kahl, "Educational Aspirations of 'Common Man' Boys," Harvard Educational Review, 23 (1953), pp. 186-203; Bridgett E. Flynn, "A Survey of Drop-Outs from a Winnipeg Junior High School," (unpublished Master's Thesis, University of Manitoba, Winnipeg, Manitoba: 1963), p. 64; and Siemens, op. cit., pp. 138-139.

<sup>86</sup>Simpson, op. cit., pp. 517-522.

significantly and multifariously on adolescents' career decisions; however, it does so most frequently as an adjunct of several other forces, rather than as a factor in its own right.

Several researchers have perceived the influence of this factor in the social context. On the one hand, Gottlieb and Ramsey have shown that peer groups reflect the educational and occupational values of the different social classes. These researchers devised a classificatory system which posits the existence of four main types of subcultures: the "vocational," which stresses preparation for an occupation; the "nonconformist," which emphasizes intellectual pursuits; the "academic," which values the intellectual aspect of education but also considers the social life of the school as a significant factor in his development; and the "collegiate," which places instrumental value on "good grades". These researchers went on to demonstrate that students from high socioeconomic backgrounds evinced a greater tendency to identify themselves with the "academic" subculture, while the lower class students were more frequently found in the vocationally oriented subcultures.<sup>87</sup>

On the other hand, other researchers have perceived peer groups as agents of social mobility. Beilin found that high-aspiring boys of the working class tended to associate

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<sup>87</sup>Gottlieb and Ramsey, op. cit., pp. 192-194.

more frequently with middle class boys than with boys of their own class. Similarly, in a study of pairs of best friends drawn from a sample of seventeen-year-old American boys and controlled for intelligence, social class and the parental aspirations for their sons, Haller and Butterworth found that the tendency for friends to share like educational and occupational aspirations was strongest when both boys were drawn from the highest social class, next strongest when a higher and a middle class boy were best friends, next when a higher and a lower class boy were best friends; the similarity aspirations was less marked, however, in instances when both boys came either from the middle or the lower classes.<sup>88</sup>

Teacher encouragement. According to several studies located, this factor has a very minimal bearing on students' post high school occupational plans, especially when compared to the influence of other factors. Powell found that most students had been "little helped or influenced vocationally by counsellors." Likewise, Berdie concluded that only approximately 10 percent of Minnesota students on the threshold of a variety of post high school vocational goals reported teachers or counsellors as determinants of the choice

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<sup>88</sup>Harry Beilin, "The Pattern of Responsibility and Its Relation to Social Class Mobility," Journal of Social Psychology, 44 (1956), pp. 33-48; and Archibald Haller and C.E. Butterworth, "Peer Influence on Levels of Occupational and Educational Aspirations," Social Forces, 38:4 (1960), pp. 289-295.



of their high school curricula.<sup>89</sup> Finally, in a Canadian study, Forcese and Siemens reported that, in the case of low and medium socioeconomic groups, teacher encouragement was associated with higher aspirations; but, in the case of children from the high socioeconomic groups, teacher encouragement seemed irrelevant.<sup>90</sup>

Community of residence. The generalizations arising out of the review of this factor varied, for the most part, according to the manner in which the sample was categorized. In studies in which the sample was dichotomized into "rural" and "urban" components, there appeared to be a significant and, for the most part, linear relationship between the type of community of residence and the educational and occupational aspirations of boys and girls. For example, on the basis of ten studies--five relating to educational and five relating to occupational aspiration levels--conducted in the last decade and varying somewhat in their definitions of "aspiration" as well as in their sampling procedures, Siemens advanced the following generalizations: First, insofar as their educational aspirations were concerned, the farm youth tended to lag far behind the more urban segments of the population. Second,

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<sup>89</sup>Marvin Powell, The Psychology of Adolescence (New York: The Bobbs-Merrill Company Inc., 1963), pp. 126-133; and Berdie, op. cit., pp. 120, 131.

<sup>90</sup>Siemens and Forcese, op. cit., pp. 18-19.

though the findings respecting the influence of the community of residence on the occupational aspiration levels generally reflected those regarding this factor's bearing on educational aspirations, they did so with less decisiveness; for boys higher occupational aspiration levels were frequently associated with urban parental residence; for girls, occupational aspiration levels were less often associated with rural-urban residence differences.<sup>91</sup>

The findings of the studies in which the community of residence variable was categorized more finely, however, parallel, with one major exception--a decrease in linearity--the findings reported above. Evidence supplied by both Berdie and Rogoff suggests that college-going aspiration is associated, though not strictly linearly, with larger communities.<sup>92</sup> Similarly, Siemens found boys' and girls' educational and occupational levels to be related, albeit not linearly, to the size of their parents' communities of residence.<sup>93</sup>

Conclusion. Numerous empirical studies showing relationships between a variety of endogenous and exogenous

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<sup>91</sup>Siemens, op. cit., pp. 58-60.

<sup>92</sup>Berdie, op. cit., pp. 178-231; and Natalie Rogoff, "Local Social Structure and Educational Selection," cited in A.H. Halsey, Jean Floud and C. Anderson, Education, Economy and Society: A Reader in the Sociology of Education, (New York: The Free Press of Glencoe, 1961), pp. 243-247.

<sup>93</sup>Siemens, op. cit., pp. 58-60.

background factors and vocational selection were reviewed in this section. Close scrutiny reveals that this body of research had been undertaken over a wide range of years, that it varied, sometimes widely, in sampling and scaling techniques, and in the precise nature of the problems investigated. As a consequence of these and other less obvious methodological shortcomings, these studies do not permit making firm generalizations on any aspect of the problem under investigation. They did, however, point to the possibility of significant relationships between a number of factors and the decision to attend the M.I.T.

#### Summary

Chapter II was concerned with reviewing a wide array of studies on various aspects of vocational selection. From the review on theories of vocational choice, it was posited that a vocational choice could be perceived as a by-product of a fairly orderly interaction between two broad categories of factors in the chooser's background. The second section of the review, provided the theoretical substantiations for the existence of specific factors within the two broad categories; while the third section described the nature and dimensions of these factors' influence upon various post secondary educational decisions. In summary, this review provided the rationale for the selection of factors that were investigated in the present study.

On the basis of this review, it was hypothesized that sex, scholastic performance, home situation, religious affiliation, ethnic origin, citizenship status, social status, educational level of parents, reactions of parents, peers and teachers, and community of residence were significantly related to students' decisions to elect the M.I.T. as their post secondary training institution.

In the next chapter the methodology used to test the tenability of the hypothesized relationships is discussed.

## CHAPTER III

### METHODOLOGY

The purpose of this chapter is to state the hypotheses which were tested in this study, to discuss the design of the instrument used for collecting the data, and to discuss the techniques and procedures followed in analyzing the data.

#### I. NULL HYPOTHESES

##### Null Hypothesis I

There is no relationship between the decision to attend the M.I.T. and each of the following endogenous factors in the students' backgrounds: sex; scholastic performance.

##### Null Hypothesis II

There is no relationship between the decision to attend the M.I.T. and each of the following exogenous factors in the students' backgrounds: home situation; religious affiliation; ethnic origin; citizenship status; social status; educational level of parents; perceived attitudes toward the decision of parents, peers and teachers; community of residence.

#### II. COLLECTION OF THE DATA

##### The Instrument Used

The instrument used to collect the data required for testing the null hypotheses was a questionnaire comprised of forced choice and open-ended, scalable and non-scalable

questions, many of which are adapted from research done by Berdie in the United States and Siemens in Canada.<sup>1</sup>

Scales Used in Conjunction with the Questionnaire

Two related requirements--uniformity of interpretation and amenability to statistical analyses--prompted the incorporation of three scales into this study. These are discussed below.

Home situation. All respondents who indicated that both of their parents were living and were neither separated nor divorced were regarded as having a "normal" home situation. Conversely, those students who indicated either that one or both of the parents were deceased or that the parents were living but separated or divorced were regarded as having a "broken" home situation.

Father's occupational status scale. To determine the father's occupational status, Blishen's "Occupational Class Scale" was utilized.<sup>2</sup> The occupations which the students ascribed to their fathers were ranked according to this seven-point scale.

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<sup>1</sup>Ralph F. Berdie, After High School--What? (Minneapolis: University of Minnesota Press, 1954), pp. 51-54; and Leonard B. Siemens, The Influence of Selected Family Factors on the Educational and Occupational Aspiration Levels of High School Boys and Girls, No. 1 (Winnipeg, Manitoba Faculty of Agriculture and Home Economics, University of Manitoba, June, 1965), pp. 120-125.

<sup>2</sup>Bernard R. Blishen, "The Construction and Use of an Occupational Class Scale," cited in B.R. Blishen et al,

The use of this scale in the present study may be justified on the grounds that Blishen himself had found the rank scores on his scale to correlate highly (+ .94) with the rank scores on an occupational status scale developed by the National Opinion Research Center in the United States.

One weakness in this scale is that, owing to a wide spread in their incomes (in addition to education, income is a criterion upon which Blishen's scale is constructed.) farmers defy easy categorization. However, as noted by Porter, if an "average" farmer can be imagined, he would probably assume a class level akin to that of skilled trades, i.e., Class V.<sup>3</sup>

Socioeconomic status scale. This scale, consisting of eleven diagnostic items of material and cultural nature, is an adapted version of Sewell's "Scale for the Measurement of Farm Family Socioeconomic Status."<sup>4</sup>

Because Siemens' sample consisted of urban as well as of rural youth and, further, because he was concerned that some of the items might no longer reliably discriminate between social classes, he made several modifications in

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Canadian Society: Sociological Perspectives (Glencoe, Ill.: The Free Press, 1961), p. 452.

<sup>3</sup>John Porter, The Vertical Mosaic: The Analysis of Social Class and Power in Canada (Toronto: University of Toronto Press, 1965), p. 161.

<sup>4</sup>Siemens, loc. cit.

Sewell's scale. First, in view of the relatively extensive rural coverage and inexpensiveness of electrical power in Manitoba, he deleted "lighting facilities"; in its place he inserted "home ownership." Second, because radio ownership was a well nigh universal phenomenon in this province, Siemens replaced this item by two other cultural possessions-- "record player" and "television". Third, he deleted "husband's and wife's attendance at church or Sunday Schools" contending that, particularly in urban areas, this item was not likely a valid measure of social participation. Finally, because father's and mother's educational levels were to be two important variables in his study, Siemens deleted these items found in Sewell's scale.<sup>5</sup>

For the purpose of this study, each positive item was counted one point. In scaling the room-person item, a ratio of 1.3 or greater rooms per person was considered positive, as was the ownership of a 1964 or more recent model of automobile. If home construction was either brick, stucco or painted frame, this item was, likewise, considered positive. Further, this eleven-point scale was arbitrarily collapsed as follows: respondents who scored eleven points on this scale were assigned a status rank order of One; those who scored ten points were assigned a status rank order of Two, and so on.

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<sup>5</sup>William H. Sewell, "A Short Form of the Farm Family Socio-Economic Status Scale," cited in Siemens, op. cit., p. 49.



Those who scored six or fewer points were designated a status rank order of Six.

Because this adapted version of Sewell's scale had not been statistically validated for a Manitoba population, it was only possible to assume that it was a reasonably reliable measure of socioeconomic status.

#### Pre-testing of the Instrument

With the view to detecting possible weaknesses in the questionnaire, it was administered to a group of about twenty-five grade twelve students. On the basis of this pre-testing, one minor clarification was made in question four (c); viz., "Interpret 'own' to mean either own outright, or in the process of buying a home."

#### Administering of the Instrument

Owing to the lateness in the school term, it was considered impractical to administer the instrument personally. With the consent of the Superintendent of the Manitoba Institute of Technology, an alternative plan was adopted. An instructor at the Institute, who had had experience in research, was briefed and assigned the task of administering the instrument.<sup>6</sup> This task the instructor performed on two consecutive days in the early part of June, 1966.

As it had been anticipated, this plan yielded a high percentage (92.5 percent) of properly completed questionnaires;

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<sup>6</sup>See Appendix C.

the one apparent exception to this being the "misanswering" of the questions intended to elicit information on attitudes of parents and teachers towards the students' decisions to attend the M.I.T. Instead of circling a response to each of the five statements in questions seventeen (a), seventeen (b), and question eighteen, respectively, some students merely circled a response to only one of the five statements in each of these questions.

### III. TREATMENT OF THE DATA

#### Preparation of the Data for Analysis

The responses to questions three, four, twelve and sixteen<sup>7</sup> were scaled and the responses to questions seventeen, eighteen and nineteen were recast so as to render them usable.<sup>8</sup> These responses, together with the responses from the remaining questions, were coded and transferred to I.B.M. cards.

With the aid of a computer, the responses were counted, translated into percentages and organized into frequency distribution tables showing how each of the selected factors were related to the decision to attend the M.I.T.

#### Analysis of the Data

Rationale. The problem of the study was to determine

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<sup>7</sup>These questions relate to home situation, socioeconomic level, occupational class and failure record in high school, respectively.

<sup>8</sup>The ways the responses to these questions were recast are described in their appropriate contexts in Chapter IV.

whether the hypothesized relationships between the selected background factors and students' decisions to attend the M.I.T. were significant. To this end, a two-stage plan of analysis was adopted. The first stage helped to rule out the probability that the relationships were functions of chance. The second stage helped to detect possible spurious relationships and/or to specify the conditions under which particular relationships held.

Procedure. The question whether the obtained relationships were significant was resolved in one of two ways. Where suitable parametric data were unavailable for determining the disposition of a particular relationship, direct comparison of the proportions of the variates was used as the basis for acceptance or rejection of the null hypothesis underlying that relationship. But, in instances where appropriate data were available (which was true of most instances) the chi square test of goodness of fit was used as the basis for deciding the disposition of the null hypotheses.

Where there was some chance, on the strength of a priori reasoning, theory, or empirical research, that the obtained relationships might have been colored by their association with other correlates of the decision to attend the M.I.T., the second stage of analysis was performed. Because of the inter-relatedness of correlates of vocational selection, this meant that practically every relationship

was subjected to this further analysis.

This second stage of analysis entailed setting up contingency tables in which the data for the relationship between the decision and the factor focused upon were cross-tabulated with data for the relationship between the decision and the hypothesized explanatory factor. To determine whether the association of factors in the table varied to a greater extent than could be expected by chance, the chi square test of independence was employed.

#### Additional Notes on the Analyses

The Yates correction was applied in chi square tests in which the expected frequencies failed to meet minimum cell requirements and/or in which there was only one degree of freedom.

The complete tables for each of the analyses reported in the test are found in the appendix--those pertaining to the first stage in Appendix A, those to the second stage in Appendix B.

In the interest of consistency and in some instances in the interest of minimum cell requirements, most of the contingency tables presented in the text were reduced to 2 x 2 tables. Where such reduction could not be justified on statistical grounds, the data were more finely categorized. Where the results of the table in the text and the table in the appendix differ essentially, i.e., where the results of one table do reach, while the results of the other table fail

to reach the .05 level of significance, this discrepancy is reported in the appropriate context.

#### IV. THE SAMPLE

On May 31, 1966, two hundred and fifty-three (253) students were registered in first-year technology courses at the M.I.T. Two hundred and thirty-four (234) of these students, representing 92.5 percent of the total, completed the questionnaire which was administered in June. Table I presents the frequency distribution of these students by sex, by age, and by course taken at the M.I.T.

Examination of the table reveals several interesting features: (1) that the school had a decidedly male clientele; (2) that while the students' ages ranged from seventeen and younger to twenty-one and older, approximately two-fifths fell into the eighteen or nineteen-years-old categories, further, that boys tended to be older than the girls, approximately four times as many boys as girls having fallen into the nineteen years or older categories; (3) and that Business Administration had the largest enrolment, while Chemical Technology and Electronic Technology had the smallest enrolment.

TABLE I

FREQUENCY DISTRIBUTION OF STUDENTS WHO ANSWERED THE QUESTIONNAIRE  
BY AGE, BY SEX, BY COURSE TAKEN AT M.I.T.

Course	Age										Total	
	17 & Under		18		19		20		21 & Over		M	F
	M	F	M	F	M	F	M	F	M	F		
Business Administration	5		12	1	18		17		19		71	1
Secretarial Science		5		18		2		1		1		27
Chemical Technology			2	1	5	1	3	1	6		16	3
Civil Technology			6		10		10		9		35	
Electrical Technology	2		4		8		4		1		19	
Electronic Technology			13		8		7		11		39	
Mechanical Technology	1		3		5		7		7		23	
Total	8	5	40	20	54	3	48	2	53	1	203	31

## CHAPTER IV

### PRESENTATION AND ANALYSIS OF THE DATA

The purpose of this chapter is to present the relationships between the selected factors and students' decisions to attend the M.I.T.

#### I. INFLUENCE OF ENDOGENOUS FACTORS

Sex. The literature reviewed indicates that the sex variable may influence vocational decisions both independently of, as well as in conjunction with, other correlates. In the section immediately following, the question of the independence status of the sex variable is briefly considered. Throughout the succeeding sections of this chapter, the sex variable is used in a "control" capacity, the main purpose of this further investigation being to unmask possible spurious relationships between the remaining selected factors and the decision. In interpreting the results arising from the analyses of this variable, the reader is cautioned to make due allowances for the disparity in the proportions of the two sexes.

$H_0$ I: 1. There is no relationship between the sex of the students and their decisions to attend the M.I.T.

As shown in Table I, the proportion of males in attendance at the M.I.T. was approximately seven times greater than the proportion of females. These results appear to

warrant at least tentative rejection of the null hypothesis. Firmer conclusions on the question whether the observed relationship is an independent one or whether it is contaminated by extraneous forces must, however, await further research.

Scholastic performance. In this study, students' grade XII average was regarded as the primary measure of scholastic performance. However, because of the possibility of their exerting either an independent influence on or of contaminating the results of the analysis of the relationship between the grade XII average and the decision, three other measures of scholastic performance--course completed in high school, failure record in high school, and failure record in post-high school--were included in the analyses.

$H_0$ I: 2.1. There is no relationship between scholastic performance, as measured by grade XII average, and the decision to attend the M.I.T.

To test this null hypothesis, students were asked to indicate which one of nine average ranges they achieved in grade XII final examinations. The responses were then collapsed into four broad categories, as illustrated in Table II. Examination of the results reveals that more than four-fifths of the 226 students (whose responses were classifiable as indicated) attained averages in the 50 - 69 percent range, while the remaining one-fifth attained averages in the 70 percent and over range.

To determine whether the observed distribution was



TABLE II  
 FREQUENCY AND PERCENTAGE DISTRIBUTION OF STUDENTS  
 BY GRADE XII AVERAGE

Average Level	Number	Percent
50 - 59%	55	24
60 - 69%	133	59
70 - 79%	35	16
80% & over	3	1
Total	226	100

significant, the following analyses were carried out. The first analysis compares the averages of M.I.T. students who had completed the "University Entrance" course in grade XII with the average of a cohort of 4032 Manitoba students who on the basis of having written five University Entrance Course exams in June, 1966, had achieved averages of at least fifty percent and secured grade twelve standing.

Inspection of Table III reveals that M.I.T. students were under-represented in the lowest and the two highest categories, but substantially over-represented in the middle, i.e., the "60 - 69%" average category. The chi-square test indicates that the observed distributions were highly unlikely to have occurred by chance. However, in light of the differing sizes of the observed and theoretical frequencies such an interpretation can be entertained only with much caution.

TABLE III

OBSERVED AND THEORETICAL DISTRIBUTION OF STUDENTS  
BY AVERAGE LEVEL ATTAINED IN GRADE XII

Average Level	% Observed (N = 181)	% Theoretical* (N = 4,032)
50 - 59%	24	37
60 - 69%	59	36
70 - 79%	16	21
80% & over	1	6
Total	100	100

D/F=3,  $\chi^2=43.24$ , P/.001

\*Source: Director of Research and Examinations, Manitoba Department of Education. For purposes of comparability, students who had completed other than "University Entrance" course were excluded from analysis.

The second analysis tests the null hypothesis that the average ranges at M.I.T. do not differ significantly from those expected on the assumption of normality. Using the method described by Guilford,<sup>1</sup> Table IV was obtained. Inspection of this table indicates that (as was the case in the previous analysis) the M.I.T. students were under-represented in the two higher average brackets. Meanwhile,

<sup>1</sup>J.P. Guilford, Fundamental Statistics in Psychology and Education (fourth edition; New York: McGraw-Hill Book Company, 1965), pp. 243-246.

TABLE IV

OBSERVED AND THEORETICAL DISTRIBUTIONS OF STUDENTS  
BY AVERAGE LEVEL ATTAINED IN GRADE TWELVE

Average Level	% Observed (N = 226)	% Theoretical* (N = 226)
50 - 59%	24	20
60 - 69%	59	54
70 - 79%	16	24
80% & over	1	2
Total	100	100

$$D/F=3, \chi^2=8.72, P<.05$$

\*Based on the assumption that the averages were "normally" distributed.

the M.I.T. students were over-represented not only in the "60 - 69 percent" but also in the "50 - 59 percent" category. Chi-square analysis reveals that the differences between the observed and expected frequencies is sufficiently large to warrant rejection of the null hypothesis at the .05 level of significance. The findings also lend further support for the proposition that the M.I.T. appears to be preferred to a greater degree by students falling into the lower average range than by students falling into the higher average ranges.

Because minimum average requirements for admission to most faculties at University are similar to those for

admission to M.I.T., it was questioned whether the findings reported above do not simply suggest a relationship between grade XII average and post-secondary training generally. In an attempt to shed some light on this question, the averages of M.I.T. students who had taken the University Entrance course were compared with the averages of a cohort of 3,006 students who had enrolled in first-year university courses in the 1966-67 term, a year later than was the case for the M.I.T. sample.

Table V presents the results of the test of the null hypothesis that the average ranges of the two samples does not differ significantly from chance expectation. Inspection of this table shows that approximately one-third of the university

TABLE V

COMPARISON OF GRADE TWELVE AVERAGE LEVELS  
OF "UNIVERSITY ENTRANCE" STUDENTS WHO  
ATTENDED THE M.I.T. AND THOSE  
WHO ATTENDED UNIVERSITY

Average Level	% Observed (N = 181)	% Theoretical* (N = 3,006)
50 - 59%	24	20
60 - 69%	59	48
70 - 79%	16	24
80% & over	1	8
Total	100	100

$$D/F=3, \chi^2=18.33, P/.001$$

\*Source: Registrar, University of Manitoba

sample as compared to less than one-fifth of the M.I.T. sample fell into the "70 - 79 percent" and "80 percent & over" brackets; conversely, a greater proportion of the M.I.T. sample as compared to the university sample scored averages in the "50 - 59 percent" and "60 - 69 percent" brackets. Do these differences reflect real differences in scholastic performance between these two groups? Inasmuch as they may be assumed to be drawn from basically the same population (different years of enrolment and different size, notwithstanding), and further, inasmuch as the chi square value is significant at the  $\leq .001$  level, such would appear to be the case.

In summary, on the strength of the evidence presented, the null hypothesis is rejected and the alternative hypothesis, that there is a relationship between scholastic performance, as measured by grade XII average, and the decision is accepted.

$H_0$ I: 2.2. There is no relationship between type of course completed in high school and the decision to attend the M.I.T.

The study of the relationships between the type of course taken and the dependent variable was hampered by numerous shortcomings, two of which are discussed briefly below. First, while it is known that in the 1965-66 school term, three types of courses were being offered in Manitoba, it is not known whether they were accessible to all members of the sample. Second, the most recent data available for testing the null hypothesis of goodness of fit were enrolment

figures for June, 1966. The conclusion reached from the investigation of the bearing this variable had on entry into the M.I.T. must, therefore, be interpreted with extreme caution.

Table VI gives the percentage distribution of M.I.T. students who reported having completed one of the three curricular offerings and compares these distributions with those based on enrolment figures for Manitoba for the 1965-66 school term. One noteworthy feature in this table is that four-fifths of the M.I.T. students and slightly more than four-fifths of the 1965-66 cohort of Manitoba students had completed or had followed the "University Entrance" course;

TABLE VI

OBSERVED AND EXPECTED DISTRIBUTION OF STUDENTS  
BY COURSE COMPLETED IN GRADE XII

Course Completed	% Observed (N = 234)	% Theoretical* (N = 9,976)
General	12	6
Industrial	8	9
University Entrance	80	85
Total	100	100

$$D/F=2, \chi^2=14.11, P/.001$$

\*Source: Director of Examinations and Research,  
Manitoba Department of Education.

another is that while the proportions of "Industrial" students were relatively the same for both the sample and the population, the "General Course" students were over-represented and the "University Entrance" students were somewhat under-represented at the M.I.T. On the basis of chi square analysis, the noted variation could occur by chance less than once in a thousand repeated observations. Hence, the null hypothesis is rejected and the alternative hypothesis, that there is a significant difference in course preference between students in the sample and students in the population, is accepted.

$H_0I$ : 2.3. There is no relationship between scholastic performance, as measured by failure record in high school, and the decision to attend the M.I.T.

The link between one index of scholastic performance and the dependent variable has already been demonstrated. Does a similar relationship exist between another presumed index of scholastic performance, failure record in high school, and the decision to attend the M.I.T.? If so, is the effect of the variable independent of other correlates of vocational selection?

The results of the survey show that not quite one-half of the students had no failures at all, approximately another one-quarter had partial failure only; meanwhile, of the remaining students, there were equal proportions in the "repeated grade" and "repeated grade(s) and/or subject(s)," respectively.

TABLE VII

FREQUENCY AND PERCENTAGE DISTRIBUTION OF STUDENTS  
BY FAILURE RECORD IN HIGH SCHOOL

Failure Record	Number	Percent
No failures	104	44
Repeated subject(s)	62	26
Repeated grade	34	15
Repeated grade(s) and/or subject(s)	34	15
Total	234	100

On the basis of this direct comparison, the null hypothesis is rejected and the alternative hypothesis, that there is a relationship between failure record in high school and the decision to attend the M.I.T., is accepted. Barring comparison with appropriate parametric data, however, the observed relationship must be regarded as highly tentative only.

In view of the tenuousness of the foregoing conclusion, it was especially important to determine to what extent, if any, the relationship between failure record in high school and the decision to attend the M.I.T. was a spurious one. To this end, the following analyses of independence of association were undertaken. In the first analysis, sex, a variable which was found to be significantly related to the decision, was controlled. The most spectacular results were as follows:



as can be seen from inspection of Table VIII, somewhat less than one-half as many males as females reported "no failures"; conversely, approximately one-fifth as many females as males reported "repeated grade" and "repeated grade(s) and/or subject(s)". The test for independence warrants the conclusion that the relationship between failure record and the dependent variable may have been a spurious one, i.e., the relationship may have owed its significance to the disproportionately large number of males in attendance at the M.I.T.

TABLE VIII

ASSOCIATION BETWEEN THE SEX OF STUDENTS  
AND FAILURE RECORD IN HIGH SCHOOL

Failure Record	% Males (N = 203)	% Females (N = 31)
No failure	40	74
Repeated subject(s)	27	19
Repeated grade	16	7
Repeated grade(s) and/or subject(s)	17	0
Total	100	100

$D/F=3, \chi^2=11.91, P/.001$

In the second analysis, average attained in high school was held constant. It is evident from the inspection of the results, which are given in Table IX, that, as in the previous

analysis, the relationship between failure record in grade XII and the decision to attend the M.I.T. may have been contaminated by a third variable.

TABLE IX

ASSOCIATION BETWEEN GRADE XII AVERAGE LEVEL  
AND FAILURE RECORD IN HIGH SCHOOL

Failure Record	Grade XII Average Level			
	50-59% (N=55)	60-69% (N=133)	70-79% (N=35)	80% + (N=3)
No failure	33	42	74	100
Repeated subject(s)	25	32	3	0
Repeated grade	13	15	14	0
Repeated grade(s) and/or subject(s)	29	11	9	0
Total	100	100	100	100

D/F=9,  $\chi^2=25.84$ , P/.01

H<sub>0</sub>I: 2.4. There is no relationship between scholastic performance, as measured by failure record in post secondary education, and the decision to attend the M.I.T.

Not infrequently, students decide to abandon one post secondary course in favor of another. A survey of M.I.T. students (Table X) reveals that forty-one of them, representing approximately one-fifth of the entire cohort, had previously attended University. Why did they transfer? Was failure in University a factor? In that the proportion

of "Failures" was almost six times as great as the proportion of "No Failures," such would appear to be the case.

TABLE X

FREQUENCY AND PERCENTAGE DISTRIBUTION OF STUDENTS  
BY FAILURE RECORD IN POST HIGH SCHOOL

Failure Record	Number	Percent
No failure	6	15
Failure(s)	35	85
Total	41	100

On the strength of the direct comparison, the null hypothesis is rejected and the alternative hypothesis, that failure record in post secondary education is related to the decision to attend the M.I.T., is tentatively accepted.

In an attempt to explain the above finding, contingency tables relating post high school failure record to other correlates of the decision to attend the M.I.T. were set up and tested for independence. While the analyses failed to produce statistically significant results, they did point to the possibility that several factors, such as high educational level of parents, high socioeconomic status and mediocre to low average performance in high school, might have induced the individual who had experienced failure at University to try an alternative form of post secondary education.

On the strength of the evidence presented, the gross null hypothesis, that scholastic performance is related to the dependent variable, must be rejected. On the same grounds, the null hypothesis of no relationship between one such index, scholastic average attained in high school, and the dependent variable is firmly rejected; the null hypothesis pertaining to the other indices of scholastic performance, the course completed in high school, the failure record in high school, and, where applicable, the failure record in post high school, is also rejected, but not without the reservations noted.

## II. INFLUENCE OF EXOGENOUS FACTORS

Home situation. The definition of and the method for securing data required for the analysis of this variable are presented in Chapter III.

$H_{0II}$ : 2. There is no relationship between home situation and the decision to attend the M.I.T.

Table XI presents the proportions of M.I.T. students with "Normal" and "Broken" home situations and compares these proportions with theoretical proportions of students from the corresponding categories. Inspection of this table shows that M.I.T. students of "Normal" home situations outnumbered those of "Broken" situations by a ratio of approximately 6:1. But when these distributions are compared with theoretical distributions, it is noted that students of "Broken" home circumstances were over-represented at the M.I.T. That the

proportions of the two sets of data differ significantly from those expected by chance is indicated by the high chi square value. Hence, the null hypothesis is rejected and the alternative hypothesis, that there is a relationship between home situation and the decision to attend the M.I.T., is accepted.

TABLE XI  
OBSERVED AND THEORETICAL DISTRIBUTION OF  
STUDENTS BY HOME SITUATION

Home Situation	% Observed (N=234)	% Theoretical* (N=18,238,247)
Normal	86	92
Broken	14	8
Total	100	100

$$D/F=1, \chi^2=12.89, P/.001$$

\*Based on an estimate given by Ivy Christina Smith, "A Comparative Investigation of the Achievement in Reading, Languages and Arithmetic of Grade Six Children from Broken and Step-Parent Homes and That of Grade Six Children from Normal Homes," Unpublished Master of Education Thesis, University of Manitoba, Winnipeg, Manitoba, 1964. An assumption had to be made that the theoretical distribution for Manitoba would parallel that for Canada.

Both the lack of more acceptable parametric data and the inconclusive nature of the findings warrant further research into the relationship between home situation and the

decision to attend the M.I.T. In particular, investigation into the psychological aspects of the influence of this factor is recommended.

Religious affiliation. The religious affiliation of the students was derived by means of item eleven in the questionnaire. This item required the respondent to check either one of the six discrete religions listed or to check the "other" category, specifying the religion into which he was born.

H<sub>0</sub>II: 3. There is no relationship between religious affiliation and the decision to attend the M.I.T.

Table XII shows that students of United Church affiliation were the most numerous, while students of Mennonite and Greek Orthodox affiliations, were the least numerous at the M.I.T.; those of the first-mentioned group making up nearly one-third of the sample and those of the latter two groups each making up less than five percent of the sample. Between these extremes were "affiliates" of the Roman Catholic, Anglican, and Ukrainian Catholic religions with proportions of 19 percent, 16 percent and 14 percent, respectively.

The question whether chance was significantly responsible for the observed variation was resolved by means of comparison of the obtained proportions with theoretical proportions, the latter having been derived from 1961 Census data for Manitoba. Close inspection of Table XII reveals

TABLE XII  
OBSERVED AND THEORETICAL DISTRIBUTION OF  
STUDENTS BY RELIGIOUS AFFILIATION

Religious Affiliation	% Observed (N=234)	% Theoretical* (N=921,686)
Anglican	16	14
Ukrainian Catholic	14	6
Greek Orthodox	4	3
Mennonite	3	6
United Church	29	29
Roman Catholic	19	23
Other**	14	19
Total	100	100

D/F=6,  $\chi^2=31.59$ , P/.001

\*Source: Census of Canada, 1961, Bulletin 92-456, Table 44, Population by religious denominations for Manitoba, 1961.

\*\*Included in this category were students of the smaller Christian denominations along with representatives from Buddhist, Jewish and Hindu faiths.

that of the groups in the sample, only the United Church proportions paralleled the proportions of the population. On the other hand, the Anglicans and Ukrainian Catholics were over-represented at the M.I.T.; whereas, the Roman Catholics were under-represented. Chi square analysis indicates that

the variations noted could not, statistically speaking, be attributed to chance. Hence, the null hypothesis is rejected and the alternative hypothesis, that there is a relationship between religious affiliation and the decision to attend the M.I.T., is accepted.

Porter's suggestion of possible confounding of the religious influence by various other socioeconomic and cultural forces gave rise to the question whether the religious influence found in the present study was not a spurious one.<sup>2</sup> To resolve this question, tests of independence between religious affiliation and each of the following correlates were undertaken: sex, socioeconomic level, occupational class of the father, educational level of the father and ethnic origin of the father. Only three of these analyses yielded significant results.

From inspection of Table XIII it is seen that students of each of the two Protestant religions were associated with "White Collar" occupational class in approximately twice as many instances as with "Blue Collar" occupational classes, conversely, students of each of the two Catholic religions were associated with "Blue Collar" occupational classes in approximately twice as many instances as with "White Collar" occupational classes. On the basis of the chi square test, it is concluded that the four largest

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<sup>2</sup>John Porter, The Vertical Mosaic (Toronto: University of Toronto Press, 1966), pp. 98-103.



religious groups at the M.I.T. were significantly associated with occupational class.

TABLE XIII  
ASSOCIATION BETWEEN OCCUPATIONAL CLASS  
AND FOUR SELECTED RELIGIOUS GROUPS

Religious Affiliation	Occupational Class	
	% White (N=88)	% Blue (N=88)
Anglican	26	15
United Church	45	27
Roman Catholic	18	33
Ukrainian Catholic	11	25
Total	100	100

D/F=3,  $\chi^2=16.31$ , P/.001

Close inspection of the following 4 x 2 table (Table XIV) indicates that the students of each of the two Protestant groups were more closely associated with "High" educational achievement of father, whereas those of each of the Catholic groups were negatively associated with "High" educational achievement of the father and positively with "Low" educational achievement of the father. On the basis of the statistical analysis, these associations are significant, providing warrant for rejecting the null hypothesis of no association

between the religion and the two educational levels of the fathers of M.I.T. students.

TABLE XIV  
ASSOCIATION BETWEEN EDUCATIONAL LEVEL OF FATHER  
AND FOUR SELECTED RELIGIOUS GROUPS

Religious Affiliation	Educational Level* of Father	
	% High (N=54)	% Low (N=128)
Anglican	31	16
United Church	43	35
Roman Catholic	24	25
Ukrainian Catholic	2	24
Total	100	100

$$D/F=3, \chi^2=17.12, P<.001$$

\*"High" indicates completed high school;  
"Low" indicates did not complete high school.

The results of the analysis for the association between religious affiliation and ethnic origin of the father are presented in Table XV. Scrutiny of this table shows that, except for the Roman Catholic group which was largely heterogeneous with respect to ethnic composition, the other three religious groups were, for the most part, linked with particular ethnic origin. Specifically, the Anglican and United Church members were predominantly British, while the Ukrainian

Catholics, as the name implies, were almost exclusively of Ukrainian origin. That these associations are significant is indicated by the high chi square value.

TABLE XV

ASSOCIATION BETWEEN ETHNIC ORIGIN OF FATHER  
AND FOUR SELECTED RELIGIOUS GROUPS

Religious Affiliation	Ethnic Origin of Father						
	Brit. (N=94)	Fr. (N=10)	Ger. (N=19)	Pol. (N=15)	Rus. (N=10)	Ukr. (N=10)	Other (N=41)
Anglican	26	0	11	0	20	33	22
United Church	55	0	31	20	0	3	15
Roman Catholic	9	80	31	47	0	11	27
Ukrainian Catholic	0	0	0	13	0	60	7
Other	10	20	27	20	80	23	29
Total*	100	100	100	100	100	100	100

Note: The salient features presented in this table were abstracted from Table LXXVI in the appendix. The chi square value of the table in the appendix was significant at  $P < .001$ .

\*"Total" includes percentage of the four selected groups plus the percentage of the other religious groups not specified in this table.

The chi square test for goodness of fit suggests that religious affiliation is related to students' decisions to attend the M.I.T. Meanwhile, the tests for independence of

association suggest that other factors in students' backgrounds, namely, occupational class, ethnic origin and educational level of the father probably affected the strength of this relationship. Firmer conclusions on the exact nature of this factor's influence upon the decision to attend the M.I.T. must await further research; this research must reckon with, among other problems, the problem of a more precise definition of the term, "religious affiliation."

Ethnic origin of parents. In accordance with an expedient adopted in the 1961 Dominion Bureau of Statistics Census,<sup>3</sup> the ethnic origin of the parents was determined by asking the question: What is the country of origin from which your father/mother or his/her male ancestor came to North America?

H<sub>0</sub> II: 4.1. There is no relationship between the ethnic origin of the father and the decision to attend the M.I.T.

From reference to Table XVI it can be seen that M.I.T. students came from a wide variety of ethnic backgrounds. Approximately two-fifths were of British origin; one-fifth of Ukrainian origin; another one-fifth of German, Polish, French and Russian origin combined; and the remaining one-fifth were of a variety of "Other" origins, the most numerous of which was the Icelandic group with 1.3 percent of the total sample.

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<sup>3</sup>See Census of Canada, 1961, Bulletin 99-516, pp. 1-3.

TABLE XVI  
OBSERVED AND THEORETICAL DISTRIBUTION  
BY ETHNIC ORIGIN OF FATHER

Ethnic Origin of Father	% Observed (N=234)	% Theoretical* (N=468,503)
British	40	43
French	4	9
German	8	10
Polish	6	5
Russian	4	1
Ukrainian	19	11
Other	11	21
Total	100	100

D/F=6,  $\chi^2=53.70$ , P/.001

\*Source: 1961 Census of Canada, Bulletin 99-516, Table 4, Manitoba.

Further inspection of Table XVI indicates that the observed proportions differ from theoretical proportions as follows: students whose fathers were of French, British or German origin were under-represented at the M.I.T., while those whose fathers were of Ukrainian, Russian or Polish origin were over-represented at the M.I.T. In view of the high chi square value (53.70), it is very unlikely (P/.001) that these variations could be attributed to chance. Hence, the null hypothesis is rejected and the alternative hypothesis

that there is a relationship between the ethnic origin of the father and the decision is accepted.

To determine to what extent various socioeconomic and cultural factors commonly associated with ethnicity may have affected the relationship between ethnic origin of the father and the decision to attend the M.I.T., further analyses were undertaken.

Table XVII presents the association between occupational class and the ethnic origin of the father. Inspection of this table shows that members of the three "Western" European ethnic

TABLE XVII

ASSOCIATION BETWEEN OCCUPATIONAL CLASS  
AND ETHNIC ORIGIN OF FATHER

Ethnic Origin of Father	Occupational Class	
	% White (N=93)	% Blue (N=90)
Western: British French German	73	55
Eastern: Polish Russian Ukrainian	27	45
Total	100	100

D/F=1,  $\chi^2=11.69$ , P/.001

groups were associated to a greater extent with "White Collar" than with "Blue Collar" occupational background; whereas, the members of the Eastern European groups, the group which was over-represented at the M.I.T., were associated with "Blue Collar" occupational class in approximately twice as great a proportion as with "White Collar" class.

As shown in Table XVIII, cross-tabulation of ethnic

TABLE XVIII  
ASSOCIATION BETWEEN SOCIOECONOMIC LEVEL  
AND ETHNIC ORIGIN OF FATHER

Ethnic Origin of Father	Socioeconomic Level	
	% High (N=149)	% Low (N=42)
Western: British French German	71	40
Eastern: Polish Russian Ukrainian	29	60
Total	100	100

$D/F=1, \chi^2=11.51, P<.001$

origin of the father with another index of social status, socioeconomic level, produced essentially similar results. There was a tendency for members of the "Western" European

ethnic groups to be more closely associated with "High" than with "Low" socioeconomic levels; and conversely, there was a tendency for members of the "Eastern" European group to be more closely associated with "Low" than with "High" socioeconomic levels. On the basis of chi square tests of independence of association, the results presented in the two foregoing analyses are highly significant.

Ethnic origin of the father was also associated with the educational level and the community of residence of the father. Inspection of Table XIX reveals that the "Western"

TABLE XIX

ASSOCIATION BETWEEN EDUCATIONAL LEVEL OF  
FATHER AND ETHNIC ORIGIN OF FATHER

Ethnic Origin of Father	Educational Level of Father	
	% Completed High School (N=56)	% Did Not Complete High School (N=136)
Western: British French German	84	57
Eastern: Polish Russian Ukrainian	16	43
Total	100	100
D/F=1, $\chi^2=13.03$ , P/.001		



ethnic grouping was associated with "Completed High School" as compared to "Did Not Complete High School" by a ratio of approximately 1.5:1; conversely, the "Eastern" grouping was associated with the same levels by a ratio of approximately 1:2.5.

Meanwhile, inspection of Table XX shows that "Western" background was more closely associated with "Urban" than with "Rural" residence; whereas, "Eastern" background was more closely associated with "Rural" than with "Urban" residence.

TABLE XX

ASSOCIATION BETWEEN COMMUNITY OF RESIDENCE  
AND ETHNIC ORIGIN OF FATHER

Ethnic Origin of Father	Community of Residence	
	% Urban (N=160)	% Rural (N=33)
Western: British French German	66	45
Eastern: Polish Russian Ukrainian	34	55
Total	100	100

$$D/F=1, \chi^2=4.84, P<.05$$

The results presented in the four preceding tables point to the conclusion that sociological factors closely linked with the two major ethnic groupings are perhaps more important than is ethnicity per se in explaining the under- and over-representation at the M.I.T. But, because of the fact that the results of cross-tabulations in which the dependent variable and each of the specified independent variables were organized into specific categories failed to reach the .05 level of significance, the above conclusion must be regarded as tentative only.

H<sub>0</sub>II: 4.2. There is no relationship between the ethnic origin of the mother and the decision to attend the M.I.T.

It has already been suggested that value orientations and cultural traditions peculiar to different ethnic groups may account in part at least for differences in vocational preference.<sup>4</sup> May it not be assumed that the vocationally relevant values can be transmitted not only by the father, but also by the mother? Owing to an increasingly common situation whereby the father is absent from the home for a large portion of the time, may it not be reasonable to expect the mother to be even more instrumental in this function than the father?<sup>5</sup> The analyses which follow shed some light on these questions.

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<sup>4</sup>Supra, pp. 15-17.

<sup>5</sup>Harold L. Hodgkinson, Education in Social and Cultural Perspectives (Englewood-Cliffs, New Jersey: Prentice-Hall Inc., 1962), pp. 53-58.

Column (1) of Table XXI presents the percentage distribution of students at the M.I.T. according to the ethnic origin of their mothers. From inspection of this part of the table, it is readily evident that the British and Ukrainian groups had the largest proportions in attendance, the former having two-fifths, the latter one-fifth of the entire sample. Meanwhile, the French, German, Polish and Russian groups each had proportions of approximately one-twentieth of the sample. On the basis of direct comparison, the null hypothesis is rejected and the alternative hypothesis, that ethnic origin of the mother is related to the decision to attend the M.I.T., is accepted.

TABLE XXI

PERCENTAGE DISTRIBUTION OF STUDENTS BY ETHNIC  
ORIGIN OF (1) MOTHER, (2) FATHER

Ethnic Origin	% Mothers (1) (N=234)	% Fathers (2) (N=234)
British	40	40
French	4	4
German	7	8
Polish	7	7
Russian	4	4
Ukrainian	19	19
Other	19	18
Total	100	100

It is noted from close inspection of Table XXI that the distributions of students according to the ethnic origins of the mother differ but very slightly from the distributions of students according to the ethnic origin of the father. This striking correspondence gives rise to the question whether the influence of the ethnic origin of the mother may not simply be the one and same thing as the influence of the ethnic origin of the father. A partial answer to this question is provided below.

Table XXII gives the association between ethnic origin of the mothers and fathers of M.I.T. students. Inspection of the table shows that with one exception, the proportions of mothers who had married males having the same ethnic origin as their own are greater than the proportions of mothers who married males of different origins. The high chi square value indicates that these associations are significant.

In view of this homogeneity in origin, it was expected that the cross-tabulations between ethnic background of the mother and the selected control variables would yield essentially similar results to those yielded in cross-tabulations of ethnic background of the father and the same control variables. Close inspection of Table XXIII reveals that such, essentially, was the case.

In summary, the evidence presented suggests rather strongly that ethnic background of the parents is related--albeit not necessarily independently of other correlates of

the decision, namely, occupational class, socioeconomic level, educational level and community of residence--to students' decisions to attend the M.I.T.

TABLE XXII

ASSOCIATION BETWEEN ETHNIC ORIGIN OF  
FATHER AND ETHNIC ORIGIN OF MOTHER

Ethnic Origin of Mother	Ethnic Origin of Father						
	Brit. (N=94)	Fr. (N=10)	Ger. (N=19)	Pol. (N=15)	Rus. (N=10)	Ukr. (N=45)	Other (N=41)
British	75	50	(26)				(29)
French		(33)					
German			47				
Polish				53		(7)	
Russian					50		
Ukrainian				(20)	(20)	78	
Other	(19)						51
Total	100	100	100	100	100	100	100

$$D/F=36, \chi^2=334.84, P<.001$$

Note: For purposes of clarity, only the two largest proportions are given in the table. The number in parentheses represents the lower of the two proportions.

TABLE XXIII

SUMMARY OF STATISTICAL ASSOCIATIONS BETWEEN ETHNIC  
ORIGIN OF (1) FATHER, (2) MOTHER AND SELECTED  
CORRELATES OF THE DECISION

	Ethnic Origin			
	Father (1)		Mother (2)	
	$\chi^2$	P	$\chi^2$	P
Occupational Class	11.69	<.001	5.36	<.05
Socioeconomic Level	11.51	<.001	5.71	<.02
Community of Residence	4.84	<.05	1.89	N.S.
Educational Level of Father	13.03	<.001	-	-
Educational Level of Mother	-	-	26.77	<.001

Citizenship status. The operational definition of this variable is given on page 3.

H<sub>II</sub>: 5. There is no relationship between citizenship status and the decision to attend the M.I.T.

The survey reveals that nearly one-third of the M.I.T. students had "fourth generation", somewhat less than one-half had "third generation", approximately one-fifth had "second generation" and a relatively small portion (3 percent) had "first generation" status. Closer inspection reveals that

nearly four-fifths of the students had at least "third generation" status, while approximately one-fifth had at least "second generation" status. On the basis of this direct comparison, the null hypothesis is rejected and the alternative hypothesis, that citizenship status is related to students' decisions to attend the M.I.T., is tentatively accepted.

TABLE XXIV

FREQUENCY AND PERCENTAGE DISTRIBUTION OF STUDENTS  
BY CITIZENSHIP STATUS OF PARENTS

Citizenship Status	Number	Percent
Fourth	72	32
Third	104	47
Second	41	18
First	7	3
Total	234	100

The question whether the obtained relationship between citizenship status and the decision to attend the M.I.T. is real or whether it is a mask of other forces germane to this decision is discussed briefly below. On the strength of previous research by both Porter and Kaill, it was hypothesized that the influence ascribed to citizenship status may owe much of its efficacy to its association with such related factors as ethnic origin, educational level and socioeconomic level

of parents.<sup>6</sup>

The expected association between citizenship status and ethnicity is borne out in Tables XXV and XXVI. Inspection reveals that "more than two generation status" is more closely associated with British, French and German groups than with the Polish, Russian and Ukrainian groups; conversely, "two or fewer" generation status is more closely associated with the Slavic than with the British, French and German group.

TABLE XXV

ASSOCIATION BETWEEN ETHNIC ORIGIN OF  
FATHER AND CITIZENSHIP STATUS

Citizenship Status	Ethnic Origin of Father	
	% Western (N=117)	% Eastern (N=69)
Third & Fourth	89	67
First & Second	11	33
Total	100	100

$$D/F=1, \chi^2=10.12, P<.01$$

<sup>6</sup>John Porter, *op. cit.*, p. 100; and Robert Kaill, "An Inquiry into the Relationship Between the Occupational Level of Parents, Their Attitude Toward Education and the Educational Achievement of the Child," Guelph, Ontario: Master of Science Thesis, 1963, p. 20.



TABLE XXVI

ASSOCIATION BETWEEN ETHNIC ORIGIN OF  
MOTHER AND CITIZENSHIP STATUS

Citizenship Status	Ethnic Origin of Mother	
	% Western (N=115)	% Eastern (N=68)
Third & Fourth	88	71
First & Second	12	29
Total	100	100

$D/F=1, \chi^2=7.29, P<.01$

As evidenced from inspection of Table XXVII, the association between citizenship status and socioeconomic level of M.I.T. students generally parallels the association between citizenship status and ethnic origin of fathers of M.I.T. students. In the light of this correspondence in results, as well as in the light of statistically significant association between socioeconomic status and ethnic origin of the father, the following observation is tentatively offered: if the relationship between citizenship status and the decision to attend the M.I.T. is a significant one, it is considerably affected by the manner in which it is associated with groups who because of cultural or socioeconomic considerations tend to elect technical training as their form of post secondary education. A more exact description of the nature of the

influence of citizenship status must await, among other things, suitable parametric data to measure representativeness and a larger sample to permit simultaneous cross-tabulations.

TABLE XXVII  
ASSOCIATION BETWEEN SOCIOECONOMIC  
LEVEL AND CITIZENSHIP STATUS

Citizenship Status	Socioeconomic Level	
	% High (N=152)	% Low (N=50)
Third & Fourth	79	66
First & Second	21	34
Total	100	100

D/F=1,  $\chi^2=5.36$ , P/.05

Social status. There is some disagreement as to the precise nature and dimensions of this variable's influence upon vocational decisions; much of this disagreement apparently arising, from the lack of a fully acceptable single method of isolating and measuring this variable.<sup>7</sup> For the purposes of this study, two commonly employed indices of this variable were used. The first, occupational class of the father, measures

<sup>7</sup>David Gottlieb and Charles E. Ramsey, The American Adolescent (Homewood, Ill.: The Dorsey Press, Inc., 1964), citing Milton M. Gordon, Social Class (Durham, N.C.: Duke University Press, 1958), p. 158.

social status in terms of schooling and income; the second, socioeconomic level, measures the same variable in terms of selected material and cultural possessions of the family.

$H_{0II}$ : 6.1. There is no relationship between social status, as measured by the occupational class of the father, and the decision to attend the M.I.T.

Inspection of Table XXVIII shows that slightly more than one-half of the students had fathers of "White Collar" origin (Classes I, II, III, and IV; or Managerial, Professional and Technical, Clerical and Sales, respectively). The remaining portion had fathers of "Blue Collar" origins (Classes V, VI and VII; or Skilled Craftsmen and Farmers, Semi-Skilled Craftsmen and Service, and Laborers, respectively). It can also be seen that fathers of Class I were the least numerous (2 percent), while fathers of Class V were the most numerous single group (29 percent).

Data presented in the left-hand column was then compared with data abstracted from appropriate sections of Census of Canada, 1961. The purpose of this comparison was to test the null hypothesis that the M.I.T. distributions differ significantly from the theoretical distributions. From inspection it is apparent that there is considerable variation between the proportions of the observed and the "population" distribution. It is particularly noteworthy that, on the whole, students of "White Collar" backgrounds were over-represented, while those of "Blue Collar" backgrounds were

TABLE XXVIII

OBSERVED AND THEORETICAL DISTRIBUTION  
OF STUDENTS BY OCCUPATIONAL CLASS

Occupational Class	% Observed (N=226)	% Theoretical* (N=246,198)
White Collar		
Class I	2	6
Class II	18	9
Class III	16	7
Class IV	15	5
Blue Collar		
Class V	29	45
Class VI	13	10
Class VII	7	18
Total	100	100

$$D/F=6, \chi^2=98.90, P/.001$$

\*Source: Census of Canada, 1961, Bulletin 94-515, Table 22, Labour Force Occupations..... for Manitoba.

under-represented at the M.I.T. On the basis of the chi square test for goodness of fit, it must be concluded that the variations noted are unlikely to have occurred by chance. Hence, the null hypothesis is rejected and the alternative hypothesis, that there is a relationship between social status, as measured by the occupational class of the father,

and the dependent variable is accepted.

H<sub>0</sub> II: 6.2. There is no relationship between social status, as measured by socioeconomic level, and the decision to attend the M.I.T.

Inspection of the left-hand column of Table XXIX reveals that nearly four-fifths of the students were distributed,

TABLE XXIX  
OBSERVED AND THEORETICAL DISTRIBUTION  
OF STUDENTS BY SOCIOECONOMIC LEVEL

Socioeconomic Level	% Observed (N=232)	% Theoretical* (N=246,198)
High		
Level I	13	-
Level II	34	3
Level III	31	9
Low		
Level IV	12	16
Level V	6	51
Level VI	4	21
Total	100	100

$$D/F=5, \chi^2=383.61, P/.001$$

\*Source: Adapted from the Census of Canada, 1961, Bulletin 94-515, Table 22, p. 25. (It is believed that while the parameter used here may not be satisfactory, it is probably a better basis than is the hypothesis of equal probability, for arriving at theoretical frequencies.)

though not linearly in the three "High" levels; whereas, the remaining one-fifth were distributed in decreasing proportions in the three "Low" socioeconomic levels. When these distributions are compared with expected distributions, it is found that students of "High" socioeconomic levels were considerably over-represented, while students of "Low" socioeconomic levels were considerably under-represented at the M.I.T. The unusually high chi square value practically rules out the probability that the observed variations can be attributed to chance. Hence, the null hypothesis is rejected and the alternative hypothesis, that there is a relationship between social status, as measured by socioeconomic level, and the decision, is accepted.

Reference to Chapter II of the present study reveals that the observed relationships between the two measures of social status and the decision to attend the M.I.T. may derive from the association of these measures with other correlates of vocational selection; in particular, educational level and community of residence.<sup>8</sup> By means of a series of cross-tabulations, this possibility is investigated below.

The occupational level of the father is frequently found to be related to the father's level of educational achievement. That such was the case for the fathers of students in the present study, is clearly evidenced by the

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<sup>8</sup>Supra, pp. 42-43.

results in Table XXX. It is seen that "White Collar" status was associated with "High School or Better" as compared to "Less than High School" achievement by a ratio of almost exactly 2:1; whereas "Blue Collar" status was related to "High School or Better" educational achievement as compared to "Less than High School" by a ratio of approximately 1:3.

TABLE XXX

ASSOCIATION BETWEEN EDUCATIONAL LEVEL  
OF FATHER AND OCCUPATIONAL CLASS

Occupational Class	Educational Level of Father	
	% High School or Better (N=63)	% Less than High School (N=162)
White Collar	79	40
Blue Collar	21	60
Total	100	100

$D/F=1, \chi^2=28.27, P/.,001$

The expected association between occupational class and community of residence is, likewise, upheld. Reference to Table XXXI reveals that "White Collar" origin was associated with "Urban" as compared to "Rural" residence by a ratio of slightly greater than 2:1; conversely, "Blue Collar" origin was associated with the corresponding residence