

AN ABSTRACT OF THE THESIS OF

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Title: AN ANALYSIS OF VOCATIONAL EXPLORATORY BEHAVIOR
AS A FUNCTION OF INTERNAL VS. EXTERNAL CONTROL
AND SELECTED STRUCTURAL VARIABLES

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The purpose of this research was to investigate the relationship of internality and structural variables such as sex, socio-economic status, and academic achievement to the extensiveness and effectiveness of vocational exploratory behavior during college.

The sample utilized in this study consisted of 108 male and female seniors who were in their fourth year of attendance at Oregon State University since entering in Fall 1976. Subjects were administered a Survey of Career Experiences and the Rotter Internal-External Control Scale. A subscale (Personal Efficacy), consisting of nine items from Rotter's I-E scale was also used as a measure of internality.

The data were analyzed using the stepwise multiple regression model. Multiple correlation coefficients were examined to determine whether a significant relationship existed between internality, sex,

socio-economic status, and academic achievement and the extensiveness and effectiveness of vocational exploratory experiences. Analysis of variance was also employed for comparisons between sex and academic majors. The .05 level of confidence was chosen for all statistical analyses.

Based on the results of the study the following null hypotheses were retained:

- 1) There is no significant relationship between extensiveness of vocational exploratory behavior and internality, sex, socio-economic status, and academic achievement
- 2) There is no significant relationship between effectiveness of vocational exploratory behavior and internality, sex, socio-economic status, and academic achievement.

Theoretical implications of the findings were discussed in conjunction with methodological weaknesses and limitations. It was recommended that replication of this study involve the development of a measure of internality compatible with vocational exploratory behavior.

An Analysis of Vocational Exploratory Behavior as a Function
of Internal vs. External Control and
Selected Structural Variables

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TABLE OF CONTENTS

Chapter

I	INTRODUCTION	1
	Statement of Problem	4
	Purpose of the Study	5
	Significance of Study	6
	Hypotheses	9
	Limitations of Study	9
	Definition of Terms	10
II	REVIEW OF RELATED LITERATURE	12
	Internal-External Control as a Theoretical Base	12
	Related Internal-External Control Research	15
	Exploratory Behavior in Vocational Development Theory	22
	Ginzberg	22
	Exploration in the period of tentative choice	22
	Exploration in the period of realistic choice	23
	Super	24
	Exploration and specific vocational development tasks	24
	Exploration and self-concept development	25
	Jordaan	25
	Summary of Reviewed Literature	27
III	METHODOLOGY AND PROCEDURES	30
	Locale of the Study	30
	Sample	30
	Data Collection Procedures	31
	Research Instruments	32
	Measures of Structural Variables	38
	Statistical Treatment of Data	38

Chapter

IV	RESULTS AND DISCUSSION	41
	Presentation of Results	42
	Correlation Findings	42
	Hypothesis 1	45
	Hypothesis 2	47
	Additional Analyses	52
	Discussion of Results	56
	Theoretical Implications	56
	Methodological Implications	60
V	SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	64
	Summary	64
	Conclusions	66
	Recommendations	67
	BIBLIOGRAPHY	70
	APPENDICES	76
	APPENDIX A	76
	APPENDIX B	78
	APPENDIX C	87
	APPENDIX D	89

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1.	General statistical summary of data	43
2.	Intercorrelation coefficients matrix	44
3.	Effects of independent variables upon extensiveness of vocational exploratory behavior with I-E internality	46
4.	Effects of independent variables upon extensiveness of vocational exploratory behavior with PE internality	48
5.	Effects of independent variables upon effectiveness of vocational exploratory behavior with I-E internality	49
6.	Effects of independent variables upon effectiveness of vocational exploratory behavior with PE internality	51
7.	Sex means and standard deviations of extensiveness and effectiveness of vocational exploratory behavior	53
8.	Means and standard deviations on extensiveness of vocational exploratory behavior for academic majors	54
9.	Means and standard deviations on effectiveness of vocational exploratory behavior for academic majors	55

AN ANALYSIS OF VOCATIONAL EXPLORATORY BEHAVIOR AS
A FUNCTION OF INTERNAL VS. EXTERNAL CONTROL
AND SELECTED STRUCTURAL VARIABLES

CHAPTER I

INTRODUCTION

The increasing developmental emphasis in vocational psychology over the past 30 years has led to a renewed interest in the role of exploration in occupational choice and adjustment. This is particularly evident in the vocational theories of Donald Super (1953, 1957, 1963) and Eli Ginzberg (Ginzberg, Ginsburg, Axelrad, and Herma, 1951) who have drawn on concepts of life stages and developmental tasks. These theoreticians have observed that exploration is of crucial importance during those years prior to full-time employment, namely adolescence and young adulthood. Super has pointed out that during adolescence, "exploratory behavior is the most common of the observed career behaviors" (1978, p. 336).

Developmental theories of vocational development present a series of stages through which individuals pass as they progress toward career maturity. One of these, the exploratory life stage, has been described by Super as the period of time (age 14 to 26) during which the three primary vocational tasks involve crystallizing, specifying and implementing a vocational choice. Initially, the

individual identifies potential fields and levels of work (crystallization), then commits him/herself to a specific occupation or field of study (specification), and finally makes an overt vocational act such as taking a full-time job or entering a specialized training program (implementation). Super maintains that successful completion of these tasks depends largely upon the adequacy of vocational exploratory experiences and that inadequate exploration often results in haphazard movement from one job to another with limited satisfaction and success (1967).

Jean-Pierre Jordaan (1963), a colleague of Super, defines vocational exploratory behavior as the conscious search of both self and environment with the hope of eliciting information that will "aid one in choosing, preparing for, entering, adjusting to or progressing in, an occupation" (1963, p. 59). He emphasizes the importance of exploratory behavior towards increasing knowledge of self and of occupational roles. Jordaan writes:

We may go a step further and hypothesize that exploratory behavior not merely modifies but plays a crucial role in shaping the way in which a person thinks about himself and about the world of work. It is both a source of data which can be utilized in the formation of self and occupational concepts and a means of testing these concepts once they have been formed. (1963, p. 60)

Jordaan also hypothesizes the following changes as outcomes of exploration:

1. Greater differentiation of interests and abilities
2. Increased understanding of the basis from which vocational decisions should be made
3. Clearer formulation of vocational objectives
4. Increased confidence and commitment to vocational goals.

Despite its recognized value by practitioners and theoreticians the subject of vocational exploratory behavior has received little theoretical attention by researchers (Super, 1978). Of particular interest to the investigator of this study was the potential usefulness of the internal-external locus of control construct in providing a theoretical perspective from which to study vocational exploratory behavior. The theory of internal-external control, introduced by Julian Rotter in 1966, attempts to predict the behavior of individuals based on the degree to which they perceive events (reinforcements) to be under personal control. Internal control refers to persons who perceive that reinforcements are determined by their own behavior while external control refers to persons who perceive the determination of reinforcement as independent of their own behavior. Rotter's theory suggests that persons who have a belief in internal control are more likely to engage in goal-oriented behaviors than those who have a belief in external control.

Statement of Problem

Since the theory of internal vs. external control was first introduced in 1966, numerous studies have lent it experimental support. These research investigations have shown that internally oriented individuals express greater initiative in their attempts to control their environment and achieve personal goals than do their external counterparts (Joe, 1971). A search of the literature revealed one study in which the relationship of locus of control and the vocational exploratory behavior of high school students was examined. However, no investigations were found in which the relationship of internal-external control and the vocational exploratory behavior of college students was studied. This lack of research is potentially significant given the importance of exploratory experiences during college. As Super et al. indicated:

The years that follow leaving high school are years of decision and action. Despite this fact, there have been . . . few attempts to study the vocational development of young people during these years (1967, p. 1)

This study sought to determine whether a belief in internal control (internality) was related to the extensiveness and effectiveness of the vocational exploratory behavior of selected university students. In addition, this study examined the relationship of structural variables such as sex, socio-economic status, and academic achievement

to vocational exploratory behavior. Socio-economic status, since early sociological studies showing its importance in occupational choice and mobility (Warner et al., 1949; Smelser, 1963), has long been recognized as a significant factor in vocational development. Super et al. (1967) in particular found both socio-economic status and academic achievement (as measured by high school grades) to be highly predictive of vocational maturity and satisfaction in young adulthood. Sex was also included as a structural variable since there is strong indication in the literature to suggest that the vocational development of females differs from that of males (Osipow, 1975; Tangri, 1975; Mishler, 1975).

Purpose of the Study

The purpose of the study was to investigate the relationship of internality and selected structural variables to the extensiveness and the effectiveness of the vocational exploratory behavior of selected university students. Extensiveness and effectiveness were chosen as dimensions of vocational exploratory behavior since Jordaan (1963) has suggested that exploratory experiences must be both varied (extensive) and relevant (effective) if they are to be of maximum benefit to the individual.

According to Jordaan (1963), vocational exploratory behavior

is essentially a problem-solving process during which information relevant to both self and world of work is sought to aid in the making of vocational decisions. Evidence, based on numerous studies using the Rotter Internal versus External Control of Reinforcement Scale (I-E Scale), suggests that the perception an individual holds with respect to his/her perception of control mediates the extent of a variety of behaviors (Joe, 1971; Lefcourt, 1976; Rotter, 1966). In particular, these studies reveal that internals, as opposed to externals, are more likely to engage in behaviors, such as information-seeking, that facilitate problem-solving (Davis and Phares, 1967; Seeman and Evans, 1968). Despite the impressive range of research associated with the internal-external control of reinforcement construct, there have been no investigations into its usefulness in understanding the vocational exploratory behavior of young adults. Structural variables such as sex, socio-economic status, and academic achievement were included in the study as an attempt to better explain vocational information-seeking behavior during college.

Significance of Study

The data gathered by this study should prove useful for several reasons. Foremost, the theory of internal-external control of

reinforcement offers the possibility of understanding why certain individuals possess greater specificity of occupational information than others. The acquisition of information regarding self and the world of work is presumed to be important in facilitating vocational maturity. Therefore, locus of control, as it relates to vocational exploratory behavior, might also be considered a potentially crucial factor in vocational maturity and readiness. In this regard the study may also reveal important implications for vocational counselors. If it could be shown that internality is an important component of career information-seeking behavior then vocational counselors might explore ways of increasing their clients' internality as a means of facilitating their vocational development.

Second, the study sought to further the understanding of the vocational exploratory experiences of students during college. Numerous studies have shown that high school seniors and college freshmen are not ready to make career decisions and plans as assumed by educators. Findings from the Career Pattern Study, which is a 20-year longitudinal study of the vocational development of a group of subjects from the age of 15 to 35 (Super *et al.*, 1957, 1960, 1967) revealed that half the subjects in the twelfth grade were poorly prepared to make the kinds of vocational decisions which were or would soon be confronting them. The average

twelfth grader was still considering occupations, frequently quite different in terms of field and level, and had little commitment to or confidence in expressed vocational goals. In assessing the career planning needs of freshmen, Waters (1979) found that 85 percent indicated a need for occupational information, particularly in relation to their majors. In evaluating findings such as these, Jordaan (1974) has stressed the need for guided exploratory experiences during college:

Much of what passes for trial and exploration in post high school years appears to be haphazard rather than purposeful trial. Ways need to be found to get pupils to do their exploring and reality testing while they are still in school and can be helped to obtain and derive maximum benefit from carefully selected exploratory experiences. (1974, p. 387)

The study also sought to contribute to the theoretical understanding of vocational exploratory behavior. Katz (1969) has suggested that the "foundation for a theory of intervention should include an understanding of the phenomena with which intervention is concerned." Much of the focus in the area of vocational exploration has been on the development and design of methods to facilitate it in schools (Hamdani, 1974; Myers, Lindeman, Thompson and Patrick, 1975). However, focus on methods has not been accompanied by concern regarding the process or the individuals that the methods are intended to influence (Super, 1978). The present study is significant

in that it represented an attempt at further understanding vocational exploratory behavior as it relates to internal-external control and other personal characteristics.

Hypotheses

H_{O1} : There is no significant relationship between the extensiveness of vocational exploratory and internality, sex, socio-economic status, and academic achievement.

H_{O2} : There is no significant relationship between the effectiveness of vocational exploratory behavior and internality, sex, socio-economic status, and academic achievement.

Limitations of Study

1. This study was limited to seniors who had been in continuous attendance at Oregon State University since entering in Fall 1976.
2. This study was limited by the extent to which the instruments used accurately measure what they purport to measure.
3. Since participants were required to self-report exploratory experiences which had occurred within the previous three

years, inaccuracy of recall may have had a limiting influence on the study.

4. This study was limited to seniors no more than 22 years of age.

Definition of Terms

Locus of Control. Locus of control is a construct referring to an individual's expectancies about how reinforcement is controlled.

Internal Control. Internal control is the perception maintained by an individual that positive and/or negative events (reinforcements) are a consequence of his/her own behavior. Internality was operationally defined by the score received on Rotter's Internal-External Control of Reinforcement Scale.

External Control. External control is the perception maintained by an individual that positive and/or negative events are determined by chance, fate, or powerful others.

Vocational Exploratory Behavior. Vocational exploratory behavior refers to activities entered into with the more or less conscious purpose of eliciting information about oneself as a potential worker or about characteristics of work roles and occupations.

Extensiveness of Vocational Exploratory Behavior. Extensiveness of vocational exploratory behavior refers to the variety of vocational exploratory activities undertaken by the individual.

Effectiveness of Vocational Exploratory Behavior. Effectiveness of vocational exploratory behavior refers to the value of exploratory activities in providing an individual with vocationally relevant information.

CHAPTER II

REVIEW OF RELATED LITERATURE

The review of the literature has been organized as follows:

(1) an examination of internal-external control as the theoretical base which underlies the study; (2) an overview of relevant internal-external control research; and (3) a discussion of exploratory behavior in vocational development theory.

Internal-External Control as a Theoretical Base

Rotter's theory of internal-external control of reinforcement (1966) originated out of earlier theoretical work referred to as social learning theory (Rotter, 1954, 1960). Social learning theory attempts to predict a person's actions based on the value and expectancy s/he places on a particular reinforcement. For example, the probability of an undergraduate preparing seriously for a college exam is a function of 1) the student's expectancy that his/her behavior will result in positive feedback such as a high grade, and 2) the degree to which a high grade on the exam is desired by him/her. In this case the high grade serves as the reinforcement which increases the student's expectancy (belief) that similar behavior will lead to similar results.

In social learning theory, the reinforcement serves to strengthen the expectancy for success, that is, that a particular behavior will be followed by that reinforcement in the future. Rotter (1966), in introducing internal-external control of reinforcement, hypothesized that when a reinforcement is seen as not contingent upon the individual's behavior, then its occurrence will not strengthen the expectancy as much as when the reinforcement is seen as contingent. For example, a person who is looking for an unusual brand of tobacco and is finally able to find it will return to the same place where s/he was reinforced when s/he needs tobacco again. However, an individual who by chance discovers a dollar bill on the street is unlikely to return to that location when needing money. In the first instance, the behavior is repeated since the individual believes that his/her behavior resulted in finding the unusual tobacco brand. In the latter case, however, the attribution of discovering the dollar bill to chance or luck minimizes the probability of that behavior (returning to the location in the street) being repeated (Rotter, 1966).

Internal-external locus of control refers, then, to an individual's expectancy regarding the contingency between his/her behavior and the desired reinforcement. As such, it differs from mere expectancy of success and failure in that it is concerned with beliefs about how reinforcements are determined. Rotter (1966) has stated

that the locus of control refers to:

. . . whether or not the individual perceives that he possesses the power over what happens to him in the situation. Internal control refers to perception of positive and/or negative events as being a consequence of one's own actions and thereby under personal control; external control refers to the perception of positive and/or negative events as being unrelated to one's own behavior in certain situations and thereby beyond personal control. (p. 207)

Referring to the earlier example of the undergraduate student, the probability of seriously preparing for an exam will be a function of the student's knowledge regarding expectancy of control or the degree to which s/he attributes success to his/her own personal abilities. Even if the student's scores on previous exams have been unsatisfactory (negative reinforcement), s/he might potentially be described as having a belief in "internal control" if lack of success is perceived as contingent on his/her behavior and thereby under personal control.

According to Rotter, expectancies regarding the causal relationship between one's behavior and a specific event or reinforcement generalize to the adoption of prevailing attitudes by which the individual views events in general. Thus, internals are persons who have the generalized expectancy that events are contingent on their own actions while externals tend to expect events to be independent of their actions. Rotter suggests that these generalized

expectancies might potentially influence behavior in a variety of situations. A young child, for example, who perceives no contingency between behavior and outcomes will not be apt to learn as readily as when a contingency is recognized. Likewise, persons who lack a sense of personal control over outcomes (reinforcement) in a particular situation, are much less likely to engage in behavior that produces those outcomes. In this sense, locus of control, whether internal or external, can be viewed as an important variable in behavior predictions.

Related Internal-External Control Research

The literature revealed numerous experimental studies which have lent support to Rotter's theoretical formulations regarding internal-external control of reinforcement. For the purpose of this study, however, the investigator will limit his review to those studies which explore internal-external control of reinforcement in relationship to information-seeking and usage.

The first study of this nature was undertaken by Seeman and Evans (1962) in which they used a 12-item measure of powerlessness derived from Rotter's internal-external scale to predict knowledge about a disease among sufferers of that disease. Subjects utilized in the study were 85 tuberculosis patients

who were matched according to their educational background, length of stay in the hospital, occupation, and age. External tubercular patients were found to have less knowledge about tuberculosis than internal tubercular patients. Furthermore, when the staff of the sanatorium was asked to estimate their patients' knowledge about tuberculosis, internals were rated as more knowledgeable than externals. The results of this study supported the assertion derived from locus of control theory that internals avail themselves of pertinent information more than do externals, even if such information has negative connotations for themselves.

In a later study, Seeman (1963) again sought to determine the relationship between perception of control and information assimilation. He presented reformatory inmates with three types of information varying in utility and six weeks later assessed the subjects' retention of that information. Of the three types of information presented to the inmates, only one type, related to parole attainment, was of instrumental relevance to them. Seeman predicted that internality would be related to more accurate recall of parole information, but not to the recall of less relevant types of knowledge. The results supported Seeman's hypothesis: internals recalled more parole-relevant information than externals. The author

concluded from this study that, depending on one's perception of control, individuals differ in both their attention to and acquisition of pertinent information.

A study by Davis and Phares (1967) sought to determine whether internals actually seek more information than their external counterparts. Eighty-four males enrolled in an introductory psychology class were given the task of influencing another person regarding his/her attitudes toward the Vietnam war. The subjects were led to believe that the experimenters had a file of data available about each individual who was to be the target of influence. The investigators used the number of questions each subject asked about the specific individual whom s/he was to influence as a measure of information-seeking behavior. It was anticipated that internals would generally seek more information than externals in order to improve their chances of being effective. This hypothesis was confirmed as it was found that internals initiated more queries than externals. The results suggest that internals seem more likely to engage in preliminary steps of data gathering than externals when information-seeking seems pertinent to outcome determination.

Prociuk and Breen (1977) examined the relationship between internality and information-seeking in an academic situation. The subjects were enrolled in a semester-long course. Five weeks prior

to each exam, the students received a set of eight study questions, two of which would appear on the exam. In their preparation for the exam, students were advised to consult with the instructor and teaching assistant. Results showed that of the 34 who sought information during the semester, 23 were internals. Internals also received higher final course grades than externals, demonstrating more effective utilization of information assimilated during the term.

A similar study conducted by Wallston, Maides, and Wallston (1976) probed the relationship between health-related information-seeking behavior and internality. Male and female college students were exposed to a threatening written message on the topic of hypertension and were subsequently asked to complete a deliberately difficult questionnaire on the same topic. Both the written message and questionnaire were designed to reveal to the subjects how little they knew about hypertension. Subjects were then requested to read through a list of 16 pamphlet titles related to hypertension and to choose those which interested them. Using the number of pamphlets chosen as a measure of information-seeking behavior, the investigators found that internals chose more total pamphlets than externals.

Wilson (1975) hypothesized that locus of control would be positively related to career maturity and career information-seeking

behavior in a parochial high school setting. Using a vocational activities checklist as a measure of the occurrence of exploratory behavior, she found that internals as opposed to externals reported engaging in significantly more career-related activities, and reported more knowledge regarding their future careers.

DuCette and Wolk (1973) tested the hypothesis that internals have a greater ability to extract information from their environment and then use this information to solve a problem. One hundred thirty-eight high school students who served as subjects in the experiment were brought into a room where they were told to play two games. The first game, essentially guessing in nature, required the subject to be able to read the mind of the experimenter and determine whether the experimenter was holding an "A" or "B" card in his hand. In the second game, which emphasized skill, the subjects were told that the experimenter would be emitting some nonverbal cue that would indicate whether the card he was holding contained an "A" or "B." The investigators found that not only were internals quicker to discover the nonverbal cue of the experimenter and use it to solve the problem (extraction and use of information) but they also made more correct "guesses" in the first game, the outcome of which was explained as a function of chance. The authors concluded that not only were internals more sensitive to environmental stimuli (i. e.,

nonverbal cue of experimenter) for purposes of information extraction and usage, but they possessed greater motivation to solve problems, however ambiguous their nature.

In an attempt to account for the differences in information-extraction and usage between internals and externals, Pines and Julian (1972) hypothesized that internals would respond more to task or information demands than externals. Externals, they hypothesized, would respond more to social or interpersonal demands in a given situation. To test these hypotheses, 80 undergraduate women were exposed to tasks varying in informational difficulty and social evaluation. Social evaluation was manipulated through experimental conditions such that some of the subjects were told that their tape-recorded responses during the task were to be later evaluated by the experimenter who was present during the task, while others were told that their tape-recorded responses were for convenience purposes only and no experimenter was present during the task. Attention to and utilization of relevant cues during the task were used as measures of the subject's ability to extract and process information. The investigators found that the performance of internals improved as task difficulty increased, whereas externals did not differ significantly on tasks of varying difficulty. However, externals more than internals were affected by social evaluation, their performance

improving as evaluation became more explicit. The authors concluded that the internals' more active search for and processing of task-relevant information was in keeping with their belief in the controlling value of their own behavior in the determination of outcomes.

Phares (1968) conducted a study in which internals and externals were compared in their use of information for decision-making. All subjects learned specific information without error. A week later, the subjects were given descriptions of eight girls and ten occupations and asked to select the girl and occupation best suited for each of the four men. Subjects were also asked to list their reasons for their matches. The number of reasons given for each match was used as the criterion measure. Phares found that the number of reasons given by internals exceeded that of externals by 50 percent. In addition, when only correct reasons were counted, internals were found to have more than three times as many correct reasons than externals for their social and occupational matchings. These differences led Phares to conclude that internals make better use of information than externals, despite the fact that both might have equivalent funds of information.

Exploratory Behavior in Vocational
Development Theory

Ginzberg

Ginzberg and his associates (1951) were the first to study occupational choice from a developmental perspective. Prior to that time, the conception of vocational choice was that an individual arrives at a particular point in his/her life, usually upon graduation from high school, and selects a future career. According to this traditional viewpoint, the young person gives little thought to vocational choice until s/he is actually confronted with the reality of having to enter the world of work. Ginzberg, however, posited that occupational choice is not a single decision made at some point in time, but rather is a series of decisions made over a period of years. He divided the choice process into three stages in which fantasy choices (below age 11) are replaced first by tentative choices (age 11 to 19) and then by realistic choices (about age 17). Exploratory behavior is considered critical in arriving at tentative choices and refining them into realistic ones.

Exploration in the period of tentative choice. Ginzberg sees the tentative period as comprised of four stages during which choices are based primarily on interests (age 11 to 12), capacity (age 13 to 14) and values (15 to 16). In a last stage of transition

(age 17), these previous considerations are integrated with other reality demands. Although the invariableness of the sequence of these stages has been questioned by various researchers, the fact that exploration is important in the development of tentative choice remains unchallenged. Particularly near the end of the tentative period, exploration appears as the central process in the transition from early unrealistic occupational fantasies to more realistic considerations of interests, values, and abilities vis a vis the world of work.

Exploration in the period of realistic choice. The realistic period follows the transition stage of the tentative period and consists of three substages: exploration, crystallization, and specification. Ginzberg's conception of exploration as a stage in the development of occupational choice underscores its vocational significance during the period from age 17 to 20. In his own research, he found that college freshmen were typically hesitant about making a firm vocational commitment. Many were still undecided between strong interests; others were unclear as to their ability to succeed in their field of special interest; and almost all were conscious of their limited knowledge of the actual world of work. Ginzberg hypothesized that curricular and extracurricular exploratory experiences provided the necessary groundwork for increasing specification of vocational choice.

Super

The developmental focus in vocational psychology received a major impetus through the work of Super. Basing his theory of vocational choice largely on Buehler's (1933) conceptualization of life stages, Super outlined five vocational life periods: growth, exploration, establishment, maintenance, and decline. Each stage or period covers a wide span of development and is described by Super in terms of vocational tasks and behaviors.

Exploration and specific vocational development tasks. Super (1957, 1963, 1969) designates the period of life from age 14 to 26 as the exploratory life stage. He further divides this period into substages, each characterized by a particular vocational task. The tentative substage (age 15 to 17) involves crystallizing a vocational preference. During this time, the adolescent identifies appropriate fields and levels of work but does not choose an occupation. The transition substage (age 18 to 32) involves specification of a vocational preference which, depending on the type and length of education being pursued, might be expressed in specifying a job, a major field of study, or a graduate program. The trial substage (age 22 to 24) is concerned with implementing a vocational preference and involves making the transition from school into the world of work.

Super's theory of vocational development strongly implies

that resolution of vocational tasks during the exploratory life stage depends to a great extent upon the nature of the exploratory experiences of the individual. Inadequate exploration could arrest normal vocational maturation and potentially force an individual to repeat the cycle of crystallization, specification, and implementation.

Exploration and self-concept development. Super underscores exploratory experiences as a principal means whereby the self-concept is modified and clarified. Essentially, as Super sees it, vocational development is the process of developing and implementing a self-concept. In this sense, the exploration necessary for self-concept development is also necessary for vocational development. Exploratory experiences in the home, school and at work continually provide the adolescent opportunities for testing his/her "self" vis a vis society. Super concludes that:

. . . adolescent exploration is not so much a process of developing a new picture of one's self as of putting it into words and thus developing a basis for finding out what sorts of outlets there are in society for a person who seeks to assume a given kind of role and then making modifications in the self concept to bring it in line with reality. Adolescent exploration, then, may be viewed as a process of ascertaining and testing reality. (Super, 1957, p. 85)

Jordaan

Jordaan is one of the few vocational psychologists to have emphasized the need for empirical investigation of the role of

vocational exploratory behavior in vocational development. His work is important because of its emphasis on the process, not the result, of exploratory behavior. He defines vocational exploratory behavior as

activities, mental or physical, undertaken with the more or less conscious purpose of or hope of eliciting information about oneself or one's environment, or verifying, or arriving at a basis for a conclusion or hypothesis which will aid one in choosing, preparing for, entering, adjusting to or progressing in, an occupation. (p. 59)

Exploration, as Jordaan views it, contributes to knowledge of self and of occupational roles as well:

We may go a step further and hypothesize that exploratory behavior not merely modifies but plays a crucial role in shaping the way in which a person thinks about himself and the world of work. It is both a source of data which can be utilized in the formation of self and occupational concepts and a means of testing these concepts once they have been formed. (Jordaan, 1963, p. 60)

Implicit in Jordaan's conception of exploration is the need to explore. He states that "most exploratory acts have their origin in situations in which the individual is confronted with or experiences a need, want, or lack" (p. 54). Such confrontation creates a state of uncertainty or perplexity within the person and thereby provides the first condition for the occurrence of exploratory behavior. For the adolescent this state of uncertainty may arise from the requirement that s/he choose a school major, state a career preference, or

choose an entry job.

Jordaan sees exploratory behavior as being characterized by search, experimentation, investigation, trial, and hypothesis testing. In this sense, the explorer must be conscious that s/he is seeking vocational information:

It is the process by which the subject arrives at his discovery or new knowledge which is of crucial consideration. If it involves experimentation, investigation, trial, search, hypothesis testing, then we believe it warrants the term exploration. If these elements are not present, we propose that the term orientation be substituted for exploration. (Jordaan, 1963, p. 56)

Jordaan recognizes that exploratory search, trial, and experimentation can occur without the conscious awareness of the process or anticipation of a specific outcome. However, he maintains that ". . . exploration which is insightful and undertaken purposefully is more likely to achieve the desired results than exploratory behavior which is not" (p. 55). Thus, Jordaan suggests that exploratory behavior which is intentional might be the most significant kind of exploration to investigate.

Summary of Reviewed Literature

The review of the literature was presented in three topical areas: internal-external control of reinforcement as the theoretical base for the study, relevant internal-external control research, and

exploratory behavior in vocational development theory.

Rotter's theory of internal versus external control of reinforcement attempts to predict behavior based on an individual's expectancy or perception regarding the locus of control of his/her reinforcements. When the reinforcement in question is perceived as being under personal control, the potential for the occurrence of behavior to secure the reinforcement is greater than in the case where no causal relationship between behavior and reinforcement is expected.

Internal-external control research relevant to this investigation revealed that internals more readily seek information pertinent to personal goals than externals. Internals, as opposed to externals, were also found to utilize and process information necessary for problem-solving or decision-making more effectively.

The importance of exploration has been underscored in influential theories of vocational development. Ginzberg and Super maintain that successful completion of vocational development tasks depends to a large extent on the nature and extent of exploratory experiences. In an even broader sense, Super views exploration as essential to self-concept development. Jordaan focuses on the process of vocational exploratory behavior and describes it as involving search, experimentation, trial, and investigation.

Given the crucial role assigned to exploratory behavior in contemporary vocational development theory, this study is significant in that it represents an attempt at further understanding vocational exploratory behavior as it relates to internal-external control and other personal characteristics.

CHAPTER III

METHODOLOGY AND PROCEDURES

The purpose of this chapter is to describe the locale and sample of the study, data collection procedures, research instruments, measures of structural variables and data analysis.

Locale of the Study

This study was conducted at Oregon State University, a land grant, coeducational institution located in Corvallis, Oregon. The enrollment of the University at the time of the study, Fall Term, 1979, was 17,181. Of this total 14,120 were undergraduates, and 3,588 were classified as seniors.

Sample

The present investigation involved a selected sample of seniors enrolled in the Fall of 1979 at Oregon State University. The design of the study required that the students be no more than 22 years of age and that they be in their fourth year of continuous attendance since entering the University in the Fall of 1976. Of the 500 seniors randomly selected by computer, 168 satisfied the aforementioned criteria and comprised the sample group utilized in this study.

Data Collection Procedures

During the fifth week of Fall Term, letters were mailed to the 168 potential participants in the study. The letter, written on Oregon State University Counseling Center stationery (see Appendix A) and signed by the investigator, described the general intent of the project and requested that the student appear in person during one of several specified time periods for more explicit instructions regarding the nature of his/her participation. In an effort to maximize the response ratio, the investigator elected to contact each of the students by telephone approximately three days after letters were sent. The telephone call was specifically intended to (1) give verbal reiteration to the nature of the research study, (2) reemphasize the importance of participation due to the selectiveness of the sample group, (3) secure verbal agreement from the student as to when s/he could appear in person. The investigator considered the verbal agreement of the student to attend a meeting necessary to insure actual attendance. The student was also told that the one required meeting would be brief and would involve only the completion of a set of questionnaires.

At each meeting, specific instructions were given regarding procedures for answering the questionnaires. Students completed a survey of career experiences and an internal-external locus of

control scale (Rotter, 1960) (see Appendix B).

Refreshments were served during the sessions and students were individually thanked for their participation. Data collection efforts beginning with the first meeting and ending with the last completed questionnaire took approximately three weeks.

Questionnaires were completed by 108 students, 58 males and 50 females, for a response rate of 65 percent of the 168 subjects to whom letters were sent. However, 31 persons of the original 168 were not contacted by telephone since four letters were returned with incorrect addresses and, in 27 cases, a phone number was not available for the student. Of those 137 contacted by phone, the actual 108 subjects represent a response rate of 80 percent. As anticipated, the telephone follow-up proved to be quite effective in maximizing participation: of the 27 not contacted by telephone only three (11 percent) actually appeared in person, while 105 (76 percent) of the 137 contacted by telephone attended.

Research Instruments

Internal-External Control Scale

A thorough discussion of the theoretical development underlying the internal-external (I-E) control scale is given by Rotter in his 1966 monograph. The scale is made up of 29 forced-choice

items, six of which serve as fillers to obscure the purpose of the test. Each item consists of two alternatives that deal with the subject's belief about the nature of his/her environment and about the expectations s/he maintains over his/her own reinforcements (see Appendix B).

Measures of reliability of the I-E control scale have been quite consistent. In general, the test-retest reliability coefficients are in the range of .60 to .83 over a one-month period and .49 to .61 over a two-month period (Rotter, 1966). In a later study, Hersch and Scheibe (1967) report a test-retest coefficient range of .48 to .84 over a two-month period. Internal consistency estimates of reliability have ranged from .65 to .79 with nearly all correlations in the .70's (Rotter, 1966).

Rotter reported good discriminant validity for the I-E scale indicated by low correlations with such variables as intelligence, social desirability, and political affiliation. Similarly, Hersch and Scheibe (1967) found nonsignificant correlations between I-E total scores and three different measures of intelligence.

Although Rotter (1966) reported two factor analyses of the I-E scale which generally support its unidimensionality, several recent studies have shown that the scale is multidimensional in nature. One such study was conducted by Mirels (1970) in which the I-E

scale scores of 316 college students were factor analyzed. He identified two principal factors. Factor I dealt with the degree of personal control an individual believes s/he has, while Factor II relates to the degree to which a person believes a citizen can exert some influence over political and world affairs.

In addition to the Rotter I-E scale, the investigator chose to utilize the Factor I subscale, identified by Mirels, as a more specific measure of personal control. This subscale (see Appendix C) consists of nine items from the Rotter I-E scale which load heavily on personal efficacy. (This subscale is subsequently referred to as PE, standing for personal efficacy.) It was assumed that the PE scale would have more predictive potential for the behavior in question in this study than the I-E scale.

Survey of Career Experiences

A self-administering questionnaire, the Survey of Career Experiences, was utilized as a measure of vocational exploration. It is a modified version of the Survey of Career Plans and Experiences developed as part of a doctoral dissertation (Buck, 1970), completed at Teachers College, Columbia University. The original questionnaire was modified because it queried information not needed for the purposes of this research study. The modified version was

designed by the investigator in consultation with a staff member¹ of the Oregon State University Survey Research Center. The major changes involved simplifying the format in order to encourage student participation. The actual content of the modified questionnaire differs very little from the original survey, the conceptual completeness of which has already been rigorously evaluated. A detailed description of the development of the original questionnaire is found in the dissertation by Buck (1970). The instrument was intended to provide a survey of the incidence of specific behaviors within the domain of vocational exploration. It includes a variety of activities, derived from Jordaan's essay (1963), likely to provide a setting for vocational exploration; mental as well as motor behavior, self-initiated as well as other-initiated activity, work experience, educational and extracurricular activities, and discussion with peers, parents, faculty and counselors (see Appendix B).

A pilot test of the modified questionnaire, Survey of Career Experiences, was conducted with 15 Oregon State University seniors. Each student was asked to complete the Survey, record the time it took, and report comments regarding the questionnaire to the

¹Dr. Robert Mason, Oregon State University, Corvallis, Oregon.

investigator. The pilot test indicated that the modified format was generally acceptable and that the time required (10-15 minutes) was within acceptable limits. Only minor changes in wording were made in the questionnaire on the basis of the pilot test.

The Survey of Career Experiences contains two scales, one which represents the extent of vocational exploratory behavior (Ext VEB), and the other which represents the judged effectiveness of that exploratory behavior (Eff VEB). The Ext VEB set elicits responses indicating how often the student has engaged in certain activities. The Eff VEB set contains alternatives which indicate how helpful a given activity was in providing the student with vocationally relevant information. The Ext VEB set is comprised of 13 items while the Eff VEB set is comprised of 11 items. Appendix D contains a specific listing of items for the two sets.

Response items written in the form of ratings were assigned numerical values that reflected different levels of reported activity. For example, the "more than average," "average," "somewhat less than average," and "very little" response categories pertaining to the amount of thought given to career planning were given values of four, three, two, and one, respectively. Likewise, the degree of helpfulness ratings were quantified so that a "very helpful" response had a value of three, a "somewhat helpful"

response had a value of two, and "not helpful" a value of one point. The number of jobs and extracurricular activities were quantified in such a way as to give twice as much value to those engaged in with exploration as a primary intent as to those engaged in with exploration as a secondary purpose.

For items which called for a free-response estimate of the number of times certain behaviors occurred, a raw estimate distribution for each item was examined. Cutting points were assigned to each distribution based on observed groupings or clusters of frequencies. This allowed the investigator to break each distribution into at least three and no more than five categories: category one having a value of one point, category two, a value of two and so on. Of the 13 items comprising the Ext VEB scale, one was converted to a three-category code, six to a four-category code, and six to a five category code. Of the 11 items comprising the Eff VEB scale, nine were in the form of three-category codes and two in the form of four-category codes. Codes for each response item are listed in Appendix D.

Measures of Structural Variables

Socio-economic Status

Parental occupational level was used as an indicator of socio-economic status (SES). Duncan's Socio-economic Index of Occupations (1961) was used to classify the occupation of the head of each household on a scale from 1 to 100.

Academic Achievement

The cumulative grade point average (GPA) of each student was used as a measure of his/her academic achievement. The 108 students in the present study were found to have a mean GPA of 3.09.

Statistical Treatment of Data

The instruments utilized in the study were hand scored. The data was keypunched onto IBM cards and was analyzed by the Cyber computer #73, using SPSS (Statistical Package for the Social Sciences). The statistical analysis of the data was completed with the assistance of a graduate student from the Statistics Department of Oregon State University. The .05 level of confidence was selected as the acceptable level of statistical significance.

A stepwise multiple regression model was used to determine the extent to which internality and structural variables such as sex, socio-economic status, and academic achievement contribute to the prediction and explanation of variance in vocational exploratory behavior. According to Nie et al. (1970), multiple regression is a general statistical technique through which one can analyze the relationship between a criterion or dependent variable (extensiveness of vocational exploratory behavior) and a set of independent or predictor variables (internality, sex, socio-economic status, and academic achievement). It can be viewed as both a means of evaluating the overall contribution of the independent variables and as a means of determining the contribution of a particular independent variable with the influence of other independent variables controlled. More specifically, the following multiple regression equation was used:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4$$

where

Y = dependent variable (e. g. extensiveness of VEB)

x_1 = internality measure

x_2 = sex

x_3 = socio-economic status

x_4 = academic achievement

Supplementary analyses comparing differences in vocational exploratory behavior for males and females and various academic majors included use of an analysis of variance. The Newman Keuls multiple comparisons test (Glass and Stanley, 1970) was also used to determine the source of variation among means for academic major groups.

CHAPTER IV

RESULTS AND DISCUSSION

The primary objective of this study was to investigate the relationship of internality and structural variables such as sex, socio-economic status, and academic achievement to the extensiveness and effectiveness of the vocational exploratory behavior of university students. The purpose of this chapter is to present, analyze, and discuss the data relative to this investigation.

In the analysis of the data, each of the null hypotheses was examined using stepwise multiple regression (which yields a correlation coefficient between the independent and dependent variables). Extensiveness and effectiveness of vocational exploratory behavior (VEB) are presented separately as a dependent variable, while the two measures of internality (Rotter's I-E and Mirel's PE scales), sex, socio-economic status (SES) and academic achievement (GPA) act as independent variables and enter the multiple regression equation in a stepwise fashion. The procedure selects the factor accounting for the greatest amount of variance in the dependent variable first, then selects the second variable with the greatest amount of variance in conjunction with the first, and so on. The variable contributing the least amount of variance with the previously

entered independent variables enters the regression equation last. Hypotheses were tested at the .05 level of significance. A general statistical summary of the data is presented in Table 1.

Presentation of Results

Correlation Findings

Table 2 presents the intercorrelation coefficients for all the variables in the study. It is particularly important to point out the uniformly low or negative correlation between the independent and criterion (dependent) variables. The only substantial correlation was between the two measures of internality, the Internal-External and Personal Efficacy scales. However, a high correlation between these two variables was not expected, since the PE scale has already been shown to be an independent measure of internality (Mirels, 1970). As a result, the differential weight of these two variables in predicting variability in the dependent measures was practically nullified. Only in relation to the effectiveness of vocational exploratory behavior score did the size of the correlation coefficient increase (although quite marginally) with the more specific measure of internality (PE scale).

Table 1. General statistical summary of data

Variable	Mean	Standard Deviation	N of Cases
Extensiveness VEB	27.6 ¹	8.1	108
Effectiveness VEB	19.0 ²	4.5	108
Internal-External	13.3	4.2	108
Personal Efficacy	5.5	2.3	108
Socio-Economic Status	65.4	27.7	108
Academic Achievement	3.1	.44	108

¹Total possible score = 56

²Total possible score = 35

Table 2. Intercorrelation coefficients matrix

Variable						
Eff VEB	.78151					
Internal-External	.00589	-.00895				
Personal Efficacy	.00403	.00700	.82064			
Socio-economic Status	.06970	.05208	-.05593	-.04717		
Sex	-.13725	-.10725	.34109	.33083	-.05846	
Academic Achievement	-.11177	-.18492	-.04887	.04578	-.00511	.13136
	Ext VEB	Eff VEB	Internal- External	Personal Efficacy	Socio-economic Status	Sex

Hypothesis 1

There is no significant relationship between the extensiveness of vocational exploratory behavior and internality, sex, socio-economic status, and academic achievement.

Two multiple regression equations were considered in testing the first null hypothesis since two measures of internality were used. Table 3 shows the results of the overall effect of the independent variables on extensiveness of vocational exploratory behavior when the Internal-External measure of internality was utilized. No significant relationship was found between extensiveness of VEB and the independent variables: the observed .462 significance level was considerably higher than the required level of .05. Together, all the independent variables accounted for only 3.5 percent of the variability in the dependent variable. The best predictor of the extensiveness of vocational exploratory behavior was sex. It accounted for 1.9 percent or more than half of the total explained variability in the dependent variable. Of all the independent variables, internality (I-E) accounted for the least amount of variation in the extensiveness of VEB; only .24 percent of the variability in the dependent variable, controlling for sex, socio-economic status, and academic achievement, was attributable to the I-E score.

Table 3. Effects of independent variables upon extensiveness of vocational exploratory behavior with I-E internality

Level	Independent Variable	Data Summary Coefficients		Simple R	Significance Levels	
		R Square	R Square Change		Simple R	F
1	Sex	.01884	.01884	-.13725	.078	.157
2	Academic Achievement	.02778	.00894	-.11177	.125	.228
3	Socio-economic Status	.03163	.00385	.06970	.237	.340
4	Internal-External	.03405	.00242	.00589	.476	.462

Table 4 considers the effects of the independent variables on the extensiveness of vocational exploratory behavior when the Personal Efficacy measure of internality was used. The inclusion of this more specific measure of internality into the multiple regression equation did not significantly affect either the overall or independent contribution of the independent variables to variability in the dependent variable. The observed significance level of .45 was considerably higher than the required level of significance (.05) which caused retention of the null hypothesis. Inclusion of the PE measure of internality did result in a slightly lower significance level than the I-E measure (.462) and, thereby, improved explanation of the variability in the dependent variable. Internality (PE) accounted for the least amount of explained variance in extensiveness of VEB: only .29 percent of total variance was explained by the PE score.

Hypothesis 2

There is no significant relationship between effectiveness of vocational exploratory behavior and internality, sex, socio-economic status, and academic achievement.

Two multiple regression equations, one for each measure of internality, were considered in testing the second null hypothesis.

Table 5 shows the effects of the independent variables on the

Table 4. Effects of independent variables upon extensiveness of vocational exploratory behavior with PE internality

Level	Independent Variable	Data Summary Coefficients		Simple R	Significance Levels	
		R Square	R Square Change		Simple R	F
1	Sex	.01884	.01884	-.13725	.078	.157
2	Academic Achievement	.02778	.00894	-.11177	.125	.228
3	Socio-economic Status	.03163	.00385	.06970	.237	.340
4	Personal Efficacy	.03459	.00297	.00403	.483	.454

Table 5. Effects of independent variables upon effectiveness of vocational exploratory behavior with I-E internality

Level	Independent Variable	Data Summary Coefficients		Simple R	Significance Levels	
		R Square	R Square Change		Simple R	F
1	Academic Achievement	.03419	.03419	-.18492	.028	.055
2	Sex	.04120	.00700	-.10725	.135	.110
3	Socio-economic Status	.04334	.00215	.05208	.296	.201
4	Internal-External	.04354	.00019	.00895	.463	.328

effectiveness of vocational exploratory behavior when the I-E measure of internality was used. The observed .30 level of significance was considerably higher than the critical .05 level, thereby causing retention of the null hypothesis. Together, all the independent variables accounted for 4.3 percent of the variance in the dependent variable. Academic achievement (GPA) was the strongest predictor of effectiveness of VEB, its correlation with the criterion variable almost reaching statistical significance ($p=.055$). Sex was the next strongest predictor of the dependent variable, and, in conjunction with academic achievement, accounted for 4.1 percent of the explained variance. Internality proved to be the least predictive of effectiveness of VEB, explaining only .02 percent of the variability in the dependent variable when controlling for the effects of sex, socio-economic status, and academic achievement.

Table 6 reveals the effects of the independent variables on the effectiveness of vocational exploratory behavior when internality was measured by the PE score. The inclusion of the more specific measure of internality resulted in a lower level of significance than that found in the equation with I-E. However, the computed level of significance (.30) was considerably higher than the critical level and the null hypothesis was not rejected. Academic achievement remained the strongest predictor, accounting for 3.4 percent of total explained

Table 6. Effects of independent variables upon effectiveness of vocational exploratory behavior with PE internality.

Level	Independent Variable	Data Summary Coefficients		Simple R	Significance Levels	
		R Square	R Square Change		Simple R	F
1	Academic Achievement	.03419	.03419	-.18492	.028	.055
2	Sex	.04120	.00700	-.10725	.135	.110
3	Socio-economic Status	.04334	.00215	.05208	.296	.201
4	Personal Efficacy	.04554	.00219	.00700	.471	.303

variance. Internality as measured by the PE score was least predictive of the effectiveness of VEB, attributing for less than .02 percent of variance when removing the effects of sex, socioeconomic status, and academic achievement.

Additional Analyses

An analysis of variance was performed comparing the following groups in relation to extensiveness and effectiveness of vocational exploratory behavior: 1) males and females and 2) academic majors (as in Agriculture, Business Administration, Home Economics, Liberal Arts, Engineering Science, and Forestry).

Table 7 illustrates the computed means and standard deviations on extensiveness and effectiveness of VEB for males and females. Although the mean scores of men were higher on both the extensiveness and effectiveness of VEB, there were no significant differences at the chosen level of significance between the two groups.

Table 8 describes the means and standard deviations on the extensiveness of VEB for academic groups. No significant differences were found among majors on extensiveness of VEB. Table 9 reveals means and standard deviations on effectiveness of VEB for academic groups. Analysis of variance indicated significant differences among the groups but the Newman Keuls multiple comparisons test revealed no significant difference between the means. This

Table 7. Sex means and standard deviations of extensiveness and effectiveness of vocational exploratory behavior

Variable	Mean		Standard Deviation		Cases	
	M	F	M	F	F	M
Extensiveness	29.0	26.8	8.4	7.6	50	58
Effectiveness	19.6	18.6	5.0	4.1	50	58

Table 8. Means and standard deviations on extensiveness of vocational exploratory behavior for academic majors

Major	N Number	Mean	Standard Deviation
Agriculture	5	30.8	3.9
Business	23	28.6	6.9
Education	8	33.6	9.6
Engineering	28	26.0	8.7
Forestry	4	27.5	5.7
Health and PE	3	27.7	11.7
Home Economics	9	31.3	7.7
Science	14	24.5	7.4
Pharmacy	3	21.0	1.0
Liberal Arts	11	28.7	8.6

Table 9. Means and standard deviations on effectiveness of vocational exploratory behavior for academic majors

Major	N Number	Mean	Standard Deviation
Agriculture	5	20.8	5.3
Business	23	20.2	3.3
Education	8	23.0	3.6
Engineering	28	17.1	4.5
Forestry	4	20.5	3.7
Health and PE	3	21.0	5.3
Home Economics	9	21.2	4.3
Science	14	17.4	5.3
Pharmacy	3	15.7	1.5
Liberal Arts	11	18.0	4.3

suggests that the groups possess homogeneity of variance and that the population means can be considered equal.

Discussion of Results

The results of this study offered no evidence to support the theoretical expectations that internality and structural variables such as sex, socio-economic status, and academic achievement are positively related to extensiveness and effectiveness of vocational exploratory behavior. The purpose of this section is to discuss these findings in light of their theoretical and methodological implications.

Theoretical Implications

Rotter's theory of internal-external control of reinforcement implies that persons with internal control expectancies are more apt to engage in behaviors relevant to personal goals than those with external control expectancies. An underlying assumption of this study was that internals as opposed to externals engage in significantly more vocational exploratory activities. However, this assumption implies that internals perceive the need for extensive exploration. This is not entirely true since a limited number of relevant exploratory experiences might preclude the need for

extensive information-seeking behavior. A political science major who desires to pursue law and has extensive summer exploratory experience at a law firm may gain sufficient information from this one activity to compensate for an extended search for career information in other areas. In this sense, internals could conceivably engage in more relevant and yet fewer exploratory activities than externals. The failure of this study to probe into the relevancy or need for extensive exploration may account, in part, for the low correlations received.

The notion that perceived need might possibly offer an explanation for the occurrence (or extensiveness) of vocational exploratory behavior is not without theoretical precedent. Jordaan (1963) points out in his discussion of exploratory behavior that "most exploratory acts have their origin in situations in which the individual is confronted with or experiences a need, want, or lack" (p. 54). Since this study did not attempt to determine the extent of the student's exploratory experiences prior to college, it was impossible to know the degree to which extended exploratory experiences were perceived as necessary by the student. It is certainly reasonable to presume that a student who enters college with well defined career objectives as a result of previous information-seeking activities might not engage in extensive exploration during college. In this sense, the

occurrence of vocational exploratory behavior may not be so much a function of perceived control as that of perceived need.

The findings of this study did not reveal significant differences between males and females on either extensiveness or effectiveness of vocational exploratory behavior. It was assumed that males would engage in significantly more career information-seeking behavior than females since self as well as societal expectations often act to impede the career development of women (Mishler, 1975). Other studies (Schlossberg and Pietrofesa, 1975) have shown that counselors often perceive career participation as inappropriate for women and thus do not encourage them to engage in career-oriented behaviors. However this study revealed the exploratory activities of women at Oregon State University to be similar in extensiveness and effectiveness to those of their male counterparts. These findings might be interpreted in light of gradually changing societal attitudes toward career-oriented women. Osipow (1975) has pointed out that as women's reasons for working extend beyond that of merely supplementing family income, increasing numbers of women are seeking goals and satisfaction out of their vocational lives. While the results of this study might possibly reflect this trend, it is imperative that educators continue to work diligently towards encouraging women to explore occupations and roles that have been traditionally limited to men.

Socio-economic status was not shown to be positively related with either extensiveness or effectiveness of vocational exploratory behavior. A number of studies have revealed the positive influence of parental occupational level (as measured by the occupation of the breadwinner) on vocational choice and aspirational level. It was assumed that middle- and upper-class families provide more opportunities which might encourage or facilitate exploratory activities. Walvoord (1979), in fact, found socio-economic status to be positively related to purposeful vocational exploratory behavior in adolescence and young adulthood. The failure of this study to support previous findings suggests the need for further research regarding the role of socio-economic status on exploratory behavior.

No statistically significant relationship was observed between academic achievement (measured by GPA) and extensiveness and effectiveness of vocational exploratory behavior. This implies that a student's ability to cope with vocational tasks and expectations is independent of his/her ability to cope with educational tasks. Although Super et al. (1967) found high school grades to be positively correlated with vocational maturity at age 25, other studies (Hoyt, 1965) have shown undergraduate GPA to have little relationship to professional or occupational success. Pallett (1965), for example, using immediate supervisors' appraisals as a measure of successful

job performance, found college grades to be unrelated ($r = .04$) to criteria of occupational competency. Hoyt does not undermine the importance of grades or academic achievement but suggests that while grades may be an indicator of how much knowledge an individual has, they serve as weak predictors of one's ability or motivation to put that knowledge to use.

Methodological Implications

A lack of support for a significant relationship between internality and other structural variables and vocational exploratory behavior could have been due to errors of measurement. This section will present a critical examination of the instruments used in this study.

Measurement of Internality. A large body of research has developed over the years showing that the correlation between attitude and behavior, or pencil and paper measures of personality traits and behavior is frequently low (Mischel, 1968; Wicker, 1969, 1971). In this light, the weak correlation between internality and vocational exploratory behavior is not wholly unexpected. Only when special efforts have been put forth to increase the specificity of the pencil and paper measures to the behavior involved have correlations improved. Even though an attempt was made in this

study to improve prediction through use of a more specific measure of internality (PE scale), items comprising the Personal Efficacy scale have no obvious relation to vocational exploratory behavior. Lefcourt (1976) has suggested that researchers dealing with the locus of control construct develop instruments to assess perceived control for a specific reinforcement. In this regard, an internal-external scale measuring "career expectancies" might have been more appropriate for use in this study.

Lefcourt (1976) has also pointed out that when attempts are made to use locus of control as the sole predictor of a particular behavior, weak correlations are to be expected since Rotter's social learning theory considers reinforcement value (as presented in Chapter II) and situational determinants equally important in predicting behavior. Although a considerable amount of research investigations, using only the internal-external locus of control scale, have shown positive relationships between internality and goal-oriented behaviors, the magnitude of these correlations has not been high. Lefcourt (1976), in his review of the literature on locus of control studies, concluded that locus of control accounts for only a limited proportion of the variance in behavior predictions and that other variables with which it interacts must also be taken into account.

Measurement of Extensiveness and Effectiveness of Vocational Exploratory Behavior. Since the definition of vocational exploratory behavior required that the student be conscious of his/her intent to explore, self reports via the Survey of Career Experiences were used as measures of exploratory behavior. However, these self-reports were necessarily retrospective in nature since, in most cases, the student needed to recall exploratory experiences and activities over the previous three years in college. The questionnaire also required the student to be able to recall the extent to which intent to explore was present as s/he began a certain activity and to judge whether or not the activity had been fruitful in relation to his/her career goals.

Although biographical inventories and questionnaires involving retrospective recall have been commonly employed in research efforts, their validity has not gone unchallenged (Buck, 1970). In this study, the accuracy of response is presumably better for some activities on the Survey of Career Experiences than for others. Walsh (1967) found that college undergraduates gave highly accurate responses to factual and informational questions such as number of courses failed or the number of times the student had changed his/her major. However, the number of times a student has discussed his/her career plans with his/her parents may be unknown to

him/her. In this latter case, only a general estimation is possible.

Questions requesting that students recall their reasons for entering a particular activity and their judgments regarding the usefulness of that activity would also seem to be vulnerable to errors of recall as well as distortions and defense mechanism (Buck, 1970). In this study, there was no way of knowing the extent of these types of errors.

In summary, although the findings of this study detract from the utility of internality and selected structural variables in predicting extensiveness and effectiveness of vocational exploratory behavior, they must nonetheless be interpreted cautiously given methodological weaknesses and limitations.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This research was stimulated by an interest in the vocational exploratory experiences of students during college years. Increasing emphasis upon the developmental model in vocational psychology has been accompanied by renewed concern regarding the role of exploration in occupational choice and adjustment. Vocational psychologists maintain that both curricular and extracurricular exploratory activities are crucial if specification of and commitment to vocational preferences is to occur. To be sure, recent studies have suggested that the lack of career direction and commitment on the part of high school seniors and college freshmen might possibly be indicative of inadequate career information-seeking behaviors. This study was an attempt to enhance understanding of vocational exploratory behavior through investigation of its relationship to Rotter's theory of internal versus external control. This theory suggests that persons who hold internal control expectancies, as opposed to external control expectancies, are more apt to engage in behaviors, such as information-seeking, that aid in problem-solving. Hence, the purpose of this study was to determine the usefulness of the theory

of internal versus external control in predicting the extensiveness and effectiveness of vocational exploratory behavior during college. In addition, structural variables such as sex, socio-economic status, and academic achievement were also examined as potential determinants of vocational exploratory behavior.

The students who were asked to participate in the study were chosen from a list of seniors randomly selected by computer. Subjects included 108 male and female seniors who were in their fourth year of attendance at Oregon State University since entering in Fall 1976.

Letters were mailed to all participants describing the nature of the research project and requesting that each student appear in person during specified time periods to complete the research instruments. The investigator administered the Survey of Career Experiences and the Rotter Internal-External Control Scale to all subjects. The Survey of Career Experiences contains two scales that measure both extensiveness and effectiveness of vocational exploratory behavior. Responses to the Internal-External Control Scale reflect the subject's belief regarding the degree to which s/he perceives reinforcement to be contingent on his/her own behavior. A subscale (Personal Efficacy), consisting of nine items from Rotter's I-E Scale was used as a more specific measure of internality.

model. Multiple correlation coefficients were examined to determine whether a significant relationship existed between 1) internality, sex, socio-economic status, academic achievement and extensiveness of vocational exploratory behavior, and 2) internality, sex, socio-economic status, academic achievement and effectiveness of vocational exploratory behavior. An analysis of variance was also used comparing differences in vocational exploratory behavior for males and females and for various academic majors.

Conclusions

In reference to the two null research hypotheses, it was concluded that:

- 1) There is no significant relationship between the extensiveness of vocational exploratory behavior and internality, sex, socio-economic status, and academic achievement
- 2) There is no significant relationship between the effectiveness of vocational exploratory behavior and internality, sex, socio-economic status, and academic achievement.

On the basis of the results of the supplementary analysis, it was also concluded that no significant differences exist between males and females or between academic groups on extensiveness and effectiveness of vocational exploratory behavior.

Recommendations

The results of this study did not show a relationship between internality and vocational exploratory behavior. Future investigations into the possible association between internality and vocational exploratory behavior should be conducted, taking into account other potentially interacting variables. For example, Rotter's social learning theory, out of which the internal-external control of reinforcement is derived, emphasizes the importance of variables such as reinforcement value. Knowledge of both the value of career information to the individual as well as his/her expectancy for control might greatly improve behavior prediction. It is also recommended that future research efforts in this area involve the use of internality measures compatible with the criterion vocational behavior. In this study, the development of a scale measuring internal and external control expectancies about career planning and exploration might have significantly enhanced the quality of prediction.

The measurement of vocational exploratory behavior posed

a problem since errors resulting from the recall of exploratory activities over a period of three years were not easily controlled. This problem might be minimized through the assessment of vocational exploration over shorter time intervals, for example, one term or two terms. It is commonly assumed that exploration is most extensive during the early terms or semesters of one's college career. Future investigations might examine the potential role of internality as well as other personality variables to extensive and effective exploration during the first year of college.

This study also revealed the exploratory experiences of women to be similar in extensiveness and effectiveness to those of men. It was suggested earlier that this might be a factor of changing societal attitudes towards career-oriented women. However, an equally important factor is the attitudes held by women themselves towards career involvement. Mischel (1975) points out that often a woman's concept of herself can potentially act as a barrier in her career development. Future research might examine the degree to which college women's career attitudes or self-concept influence the nature and extent of their exploratory activities.

Finally, based on a review of vocational exploration literature it is recommended:

- 1) That the relationship between extensive and effective exploration during college and career success be examined. Do persons who engage in exploration during college achieve greater career progress than their peers who engage in significantly less exploration?
- 2) That the types of vocational exploratory activities most predictive of future career success and satisfaction be identified
- 3) That more studies examining the extent to which exploration during college facilitates transition into the world of work be undertaken.

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APPENDICES

APPENDIX A



Your help is needed.

We know very little about how the career plans of students, such as yourself, develop while in college. We hope that you can help us learn more. A representative group of fourth year seniors has been selected to provide information that will help the university better assist students in the planning of their careers. Since the number of students selected for this project is small, your participation is crucial.

Please attend one of the meetings listed below during which time this project will be explained to you. Realizing how valuable your time is, you need attend only one of the meetings which will last 20-30 minutes.

October	29	3:30 p.m.	Room 212	OSU Memorial Union
	29	4:30 p.m.	Room 212	OSU Memorial Union
October	30	3:30 p.m.	Room 212	OSU Memorial Union
	30	4:30 p.m.	Room 212	OSU Memorial Union
October	31	3:30 p.m.	Room 212	OSU Memorial Union
	31	4:30 p.m.	Room 212	OSU Memorial Union
November	1	3:30 p.m.	Room 212	OSU Memorial Union
	1	4:30 p.m.	Room 212	OSU Memorial Union

If you have any questions or schedule conflicts, please call me at extension 2241. Your willingness to participate is truly appreciated.

Sincerely,

David Dudley

APPENDIX B

PART I
SURVEY OF CAREER EXPERIENCES

1. Compared with other seniors you know, how much thought have you, yourself, given since entering college to deciding upon your future career?

(Please check one.)

- | | |
|--|---|
| <input type="checkbox"/> more than average | <input type="checkbox"/> somewhat less than average |
| <input type="checkbox"/> average | <input type="checkbox"/> very little |
-

2. Compared with other seniors you know, how much thought, since entering college, have you given to gaining a clearer understanding of your own characteristics, such as interests, abilities, personality, needs, etc. (Please check one.)

- | | |
|--|---|
| <input type="checkbox"/> more than average | <input type="checkbox"/> somewhat less than average |
| <input type="checkbox"/> average | <input type="checkbox"/> very little |
-

- 3a. Approximately how many times since entering college have you examined texts, professional books or journals belonging to others or in a library or bookstore in order to find out what a certain field of study is like?

_____ (If "0" skip to question 4a.)

- 3b. How helpful was this in the clarification of your career ideas and plans?

(Check one.)

- | | |
|---|--------------------------------------|
| <input type="checkbox"/> very helpful | <input type="checkbox"/> not helpful |
| <input type="checkbox"/> somewhat helpful | |
-

- 4a. Approximately how many times since entering college have you attended lectures, panel discussions, or other planned presentations intended to give information about careers?

_____ (If "0" skip to question 5a.)

- 4b. How helpful was this in the clarification of your career plans and ideas?

(Check one.)

- | | |
|---|--------------------------------------|
| <input type="checkbox"/> very helpful | <input type="checkbox"/> not helpful |
| <input type="checkbox"/> somewhat helpful | |

- 9a. Approximately how many times since entering college have you talked seriously with your parents or other close adult friends or relatives about your career or post-graduation plans?

_____ (If "0" skip to question 10a.)

- 9b. How helpful was this in the clarification of your career ideas and plans?

(Check one.)

- very helpful not helpful
 somewhat helpful
-

- 10a. Approximately how many times since entering college have you talked with a professional counselor about your career or post-graduation plans?

_____ (If "0" skip to question 11a.)

- 10b. How helpful was this in the clarification of your career ideas and plans?

(Check one.)

- very helpful not helpful
 somewhat helpful
-

- 11a. Approximately how many times since entering college have you had serious discussions with other students and peers about your career and post-graduation plans?

_____ (If "0" skip to question 12.)

- 11b. How helpful was this in the clarification of your career ideas and plans?

(Check one.)

- very helpful not helpful
 somewhat helpful
-

12. Please write below the total number of jobs you have held, paid or volunteer, since entering college (If you have held no jobs, write a "0" in the space below.)

_____ Number of jobs (If "0" skip to question 15.)

13. (IF YOU HAD ONE OR MORE JOBS) People sometimes take a job to get a better idea of what they like and can do well. Thinking about those jobs you have held since entering college, would you please tell us which category best describes your reason for taking each job? (Note: the total number of jobs for all categories should be the same as the total number of jobs given in question 12.)

Number of Jobs

Category

getting career-related information was of major importance in taking job.

getting career-related information was of some importance in taking job.

getting career-related information was of no importance in taking job.

14. Again, thinking about the jobs you have held since entering college, please tell us which category best describes how valuable each job was to you. (Note: the total number of jobs for all categories should be the same as the total number of jobs given in question 12.)

Number of Jobs

Category

provided me with considerable information about myself and possible careers.

provided me with some information about myself and possible careers.

provided me with no information about myself and possible careers.

15. Please write below the number of campus and community activities and organizations in which you have been active since entering college. These should include social, political, religious, special interest groups, student government, etc. (If you have engaged in no such activities, write a "0" in the space below.)

_____ number of activities (If "0" skip to question 18.)

16. (IF YOU HAD ONE OR MORE ACTIVITIES) Thinking about these activities that you have participated in, please tell us which category best describes your reason for entering each activity. (Note: the total number of activities for all categories should be the same as the total number of activities listed in question 15.)

Number of Activities

Category

getting career-related information was of major importance in entering activity.

getting career-related information was of some importance in entering activity.

getting career-related information was of no importance.

17. Now, thinking over those activities which you have participated in since entering college, please tell us which category best describes how valuable each activity was for you. (Note: the total number of activities for all categories should be the same as the total number of activities listed in question 15.)

Number of Activities

Category

provided me with considerable information about myself and possible careers.

provided me with some information about myself and possible careers.

provided me with no information about myself and possible careers.

18. What is your sex?

Male

Female

19. What is your academic major? _____

PART II ATTITUDES TOWARD LIFE

This is a questionnaire to find out the way in which important events in our society affect different people. Each item consists of a pair of statements. Please mark in the box next to the one statement of each pair (and only one) which you more strongly believe to be the case as far as you are concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief: obviously there are no right or wrong answers.

- Children get into trouble because their parents punish them too much.
- The trouble with most children nowadays is that their parents are too easy with them.

- Many of the unhappy things in people's lives are partly due to bad luck.
- People's misfortunes result from the mistakes they make.

- One of the main reasons why we have wars is because people don't take enough interest in politics.
- There will always be wars, no matter how people try to prevent them.

- In the long run people get the respect they deserve in this world.
 - Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
-
- The idea that teachers are unfair to students is nonsense.
 - Most students don't realize the extent to which their grades are influenced by accidental happenings.
-
- Without the right breaks one cannot be an effective leader.
 - Capable people who fail to become leaders have not taken advantage of their opportunities.
-
- No matter how hard you try some people just don't like you.
 - People who can't get others to like them don't understand how to get along with others.
-
- Heredity plays the major role in determining one's personality.
 - It is one's experiences in life which determines what they will be like.
-
- I have often found that what is going to happen will happen.
 - Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
-
- In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
 - Many times exam questions tend to be so unrelated to course work that studying is really useless.
-
- Becoming a success is a matter of hard work, luck has little or nothing to do with it.
 - Getting a good job depends mainly on being in the right place at the right time.
-
- The average citizen can have an influence in government decisions.
 - The world is run by the few people in power and there is not much the little guy can do about it.
-

- When I make plans I am almost certain that I can make them work.
 - It is not always wise to plan ahead because many things turn out to be a matter of good or bad fortune anyhow.
-

- There are certain people who are just no good.
 - There is some good in everybody.
-

- In my case, getting what I want has little or nothing to do with luck.
 - Many times we might just as well decide what to do by flipping a coin.
-

- Who gets to be the boss often depends on who was lucky enough to be in the right place first.
 - Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.
-

- As far as the world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
 - By taking an active part in political and social affairs, the people can control social events.
-

- Most people don't realize the extent to which their lives are controlled by accidental happenings.
 - There is really no such thing as "luck."
-

- One should always be willing to admit mistakes.
 - It is usually best to cover up one's mistakes.
-

- It is hard to know whether or not a person really likes you.
 - How many friends you have depends on how nice a person you are.
-

- In the long run, the bad things that happen to us are balanced by the good ones.
 - Most misfortunes are the result of lack of ability, ignorance, laziness or all three.
-

- With enough effort we can wipe out political corruption.
 - It is difficult for people to have much control over things politicians do in office.
-

- Sometimes I can't understand how teachers arrive at the grades they give.
 - There is a direct connection between how hard I study and the grades I get.
-

- A good leader expects people to decide for themselves what they should do.
 - A good leader makes it clear to everybody what these jobs are.
-

- Many times I feel I have little influence over the things that happen to me.
 - It is impossible for me to believe that chance or luck plays an important role in my life.
-

- People are lonely because they don't try to be friendly.
 - There is not much use in trying too hard to please people; if they like you, they like you.
-

- There is too much emphasis on athletics in high school.
 - Team sports are an excellent way to build character.
-

- What happens to me is my own doing.
 - Sometimes I feel that I don't have enough control over the direction my life is taking.
-

- Most of the time I can't understand why politicians behave the way they do.
 - In the long run people are responsible for bad government on a national as well as a local level.
-

APPENDIX C

THE PERSONAL EFFICACY INTERNALITY SUBSCALE

- The idea that teachers are unfair to students is nonsense.
- In the case of the well prepared student, there is rarely if ever such a thing as an unfair test.
- Becoming a success is a matter of hard work; luck has little or nothing to do with it.
- In my case, getting what I want has little or nothing to do with luck.
- Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.
- There is really no such thing as "luck."
- There is a direct connection between how hard I study and the grades I get.
- It is impossible for me to believe that chance or luck plays an important role in my life. What happens to me is my own doing.

APPENDIX D

Table D1

Listing of Items for Extensiveness of VEB Scale
and Rules for Coding Raw Item Responses

Item	Coding Rules	
	If response is:	Then code:
1a. Amount of thought given to future career	"More than average"	1
	"Average"	2
	"Somewhat less than average"	3
	"Very little"	4
2a. Amount of thought given to own characteristics	Same rule as item 1 above	
3a. Number of times texts or professional	1-2	1
	3-4	2
	5-9	3
	10-19	4
	20+	5
4a. Number of times career lectures, presentations attended	1	1
	2	2
	3-4	3
	5-9	4
	10+	5

Table D.1 (Continued)

Item	Coding Rules	
	If response is:	Then code:
5a. Number of times a place of work visited	1-2	1
	3-5	2
	6-10	3
	11 ⁺	4
6a. Number of times books read about eminent people	1-2	1
	3-5	2
	6-9	3
	10 ⁺	4
7a. Number of times a "try-out" course taken	1-2	1
	3-4	2
	5-9	3
	10 ⁺	4
8a. Number of times talked with professor/advisor about career	1-2	1
	3-4	2
	5-9	3
	10-19	4
	20 ⁺	
9a. Number of times talked with parents about career plans	1-3	1
	4-6	2
	7-19	3
	20-49	4
	50 ⁺	5
10a. Number of times talked with counselor about career plans	1	1
	2-5	2
	6 ⁺	3

Table D1 (Continued)

Item	Coding Rules	
	If response is:	Then code:
11a. Number of times had serious talks with students about career plans	1-5	1
	6-10	2
	11-20	3
	21-30	4
	31+	5
13. Two times the number of jobs of "major importance" plus the number of jobs of "some importance"	1-2	1
	3-4	2
	5-6	3
	7+	4
16. Two times the number of activities of "major importance" plus the number of activities of "some importance"	1	1
	2	2
	3-6	3
	7-9	4
	10+	5

Table D2

Listing of Items for Effectiveness of VEB Scale
and Rules for Coding Raw Item Responses

Item	Coding Rules	
	If response is:	Then code:
3b through 11b ¹	Not helpful	1
	Somewhat helpful	2
	Very helpful	3
14. Two times the number of jobs with "considerable information" plus the number of jobs with "some information"	1-2	1
	3-4	2
	5-9	3
	10 ⁺	4
17. Two times the number of activities with "considerable information" plus the number of activities with "some information"	1-2	1
	3-5	2
	6-10	3
	11 ⁺	4

¹ Effectiveness codes were assigned only when there was indication of the occurrence of some VEB.