DIFFERENTIAL EFFECTS OF SHORT-TERM SMALL-GROUP INTERACTION ON THE BEHAVIORAL DEVELOPMENT OF COLLEGE FRESHMEN ACCORDING TO PERSONALITY TYPE

Thesis for the Degree of Ph. D.

MICHIGAN STATE UNIVERSITY
PAUL LOUIS GRASS

1970

This is to certify that the

thesis entitled

Differential Effects of Short-Term Small-Group Interaction on the Behavioral Development of College Freshmen According to Personality Type

presented by

Paul Louis Grass

has been accepted towards fulfillment of the requirements for

Ph.D. degree in Administration and Higher Education

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Date June 11, 1970

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ABSTRACT

DIFFERENTIAL EFFECTS OF SHORT-TERM SMALL-GROUP INTERACTION ON THE BEHAVIORAL DEVELOPMENT OF COLLEGE FRESHMEN ACCORDING TO PERSONALITY TYPE

By

Paul Louis Grass

Research indicates that behavioral development occurs during the college years in varying degrees and dimensions, according to the characteristics of individuals and their learning environments. Small groups, moreover, have a significant role in personal development, depending upon their composition and shared objectives. By controlling group composition and by specifying certain behavioral objectives, this study implemented a specific strategy of group interaction and measured its effects on college freshmen.

Volunteers from the freshman class at a midwestern, church-related, liberal arts college were matched according to their responses on the Myers-Briggs Type Indicator (MBTI) and randomly assigned to treatment (small-group) and control (stand-by) status. Each group was composed of students with identical dominant types: sensing,

intuition, thinking, or feeling. The groups were complementary, however, in that members differed with respect to their auxiliary function.

Each group met for one-and-a-half to two hours weekly over a six-week period with a senior resident assistant as facilitator. Pre-test and post-test scores from the Omnibus Personality Inventory (OPI), Form F, were analyzed as evidence of behavioral change. The final research sample, for whom all data were complete, included thirty-six subjects divided into treatment and control groups. In addition, descriptive and comparative data on the total freshman class and the project volunteers were gathered and reported.

The small-group process focused on understanding behaviors common to all group members, accepting the different behaviors of others, and developing new behaviors modeled by persons in the group. Dominant-senser and dominant-intuitive groups focused on behaviors related to their auxiliary functions, thinking and feeling. Conversely, dominant-thinker and dominant-feeler groups focused on behaviors related to their auxiliary functions, sensing and intuition.

The major hypotheses, that freshmen who participate in small-group interaction change in certain attitudes, interests, and values more than freshmen who do not; and

that behavior change is not identical among the four dominant-type groups, were supported by the results.

Multivariate analysis of variance of gain scores indicated an overall significant treatment main effect across all OPI dimensions, with significant step-down F's (.05 level) for Impulse Expression (IE) and Anxiety Level (AL). Participants in the group experience reported a greater increase in IE behavior than did nonparticipants. Participants remained at approximately the same level on AL, whereas nonparticipants reported a decrease in AL behavior.

Multivariate analysis of variance for treatment x group interaction also showed an overall significant F across all OPI scales. Four dimensions had significant step-down F's (.05 level): Impulse Expression (IE), Anxiety Level (AL), Practical Outlook (PO), and Response Bias (RB). Post-hoc comparisons revealed differential effects among the four dominant-type groups. Sensers indicated no significant differences on the four dimensions. Intuitives who participated increased on IE, maintained the same AL, and decreased on PO and RB. Participant thinkers showed higher anxiety and decreased on RB. Feelers who participated decreased on IE and indicated lower anxiety level.

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By

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A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Administration and Higher Education

1970

G67265

ACKNOWLEDGMENTS

After reading many acknowledgments in other dissertations and publications, I find myself suddenly appreciating their importance and significance in a fresh light. The search for expressive phrases with which to endow one's benefactors is a fruitless one, for the word is but a shadow to the deed. Fortunately for all of us, sincerity and gratitude require no scintillating novelty for their expression.

I am sincerely grateful, then, to many people:

To Dr. Harold Grant, chairman of my doctoral committee, for his influence in this particular case of student development, for his daily demonstration of behavioral artistry, and for his unfailing good humor and personal interest;

To Dr. Max R. Raines, Dr. Andrew C. Porter, and Dr. James B. McKee for their continuing assistance and support as members of my doctoral committee and as models of humane scholarship;

To Dr. Donald Adams, Dr. Marie Prahl, and Dr. Walter Johnson for their consistent, professional, and distinctive behavior, which has been a continuing influence on mine;

To Dr. Robert Alberti, Dr. Richard Hark, and Dr. Patrick McCary for their examples as pioneer student development specialists, which encouraged and enlightened my own efforts;

To the graduate students in the Student Development Seminar at Michigan State University for their unique demonstration of becoming and their continuing presence as stimulating colleagues for all seasons;

To Jean Fickes for being Jean Fickes: concerned, cheerful, competent, and blessed with that loving care which knows no unimportant detail when it comes to helping people;

To Mr. Joseph P. Fleischman, Vice President for Student Personnel, Saint Mary's College, for his unfailing personal and professional assistance;

To the faculty and students of Saint Mary's College for many years of stimulation, along with just the right amount of security; especially to John Craig, Bob Cummins, Ed Fischer, Jack Meenan, and Jim Mutch for their generous and sensitive contribution as group facilitators in this study;

To the Brothers of my many communities, for their support and encouragement during my years as a Christian Brother;

and, ultimately and originally,

To my parents, who began this dissertation years ago and assured its completion by their unconditional positive regard.

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INTRODUCTION

Background and Purpose of the Study

American society places its highest value and greatest hope in the nation's educational institutions and in their capacity to meet individual and social needs. But in its anxiety to maintain and strenghten itself, society, through its representatives and institutions, senses increasing discontinuity between the educational means and the desired end of social progress. Fromm has expressed what the true priority must be:

> The first and foremost of these conditions (for the development of human productiveness) is that the unfolding and growth of every person is the aim of all social and political activities, that man is the only purpose and end, and not a means for anybody or anything except himself (Fromm, 1947, 101).

Traditional liberal arts education committed itself to the development of the whole man, to freeing the individual from ignorance and prejudice so that he might realize his potential. Higher education in the post-modern age, however, occupies a central position in a highly complex, technological society which makes increasingly specialized demands on its members. A disproportionate

attention to developing technical knowledge and specialized skills neglects other aspects of human development which modern behavioral scientists increasingly assert must be fostered if man is to realize his destiny as a self-actualizing being.

Educational institutions are not sufficiently supportive of behavioral development, in the fullest meaning of that term (Katz and Associates, 1968; Sanford, 1967). This is the case because traditional institutions of higher education do not provide a satisfactory, facilitating environment for total personal development.

> There is seldom a suggestion that college might help to change the individual himself, to broaden his horizons, . . . or to give him a new sense of identity (Sanford, 1967, xiii).

Institutions of higher education typically espouse wide-ranging objectives encompassing transmission of the culture, socialization of the individual into a democratic society, development of his intellectual abilities, and furtherance of individual maturity. But even in the area of formal learning, usually defined in terms of intellectual growth, colleges are judged deficient in the effective realization of their purpose.

> (W)e do not, in our colleges today, make use of <u>any</u> learning principles in a considered, systematic, professional way. We do not design the college as a learning environment. We do not give anyone a specific responsibility for bringing to the college the best available professional and scientific knowledge for designing that environment (Simon, 1967, 76).

Because a considerable amount of theory and research already exists in the field of learning and human development, the task at hand is to apply this available knowledge rather than to wait for further clarification and demonstration (Chickering, 1969). Witherspoon's dictum that "the end of a liberal education is to set all human powers in motion" (in D. Heath, 1968, 345) calls for an environment which supports full human development by capitalizing on the self-determining and self-actualizing powers of the human person.

Objectives encompassing more than the acquisition of knowledge are commonly espoused by colleges and universities, but student development relative to them is rarely planned for and evaluated (Dressel and Mayhew, 1954). Throughout the 1960s, a growing chorus of educators has called for a total, developmental approach to higher education. Nevertheless, the continuing emphasis on passive, cognitive training gives the lie to the official catalog litany that the college aims for the total development of every student (Morris, Pflugrath, and Taylor, 1969).

If a college, by whatever name it is called, exists in order to provide "a situation of maximum rapid growth in the whole life of persons" (Trueblood, 1959, 13), it must go beyond the self-imposed limits of

curriculum and translate the theory of self-actualization into educational practice (Drews, 1968).

With all the talk about individual development and creativity, there is ample evidence that the individual student is no longer the prime reason for a college's existence (Wilson, 1966). Goals related to students receive very little emphasis when faculty and administration rank the purposes of higher education (Gross and Grambsch, 1968).

In spite of the priority which administrators and faculty bestow upon themselves, research increasingly corroborates Newman's insight of over a century ago:

> When a multitude of young men, keen, open-hearted, sympathetic, and observant, as young men are, come together and freely mix with each other, they are sure to learn from one another, even if there be no one to teach them (Newman [1852], 1891, 146).

The entrance of the freshman into college brings about a developmental opportunity in an environment that either supports and stimulates personal growth or intensifies the stress and anxiety that inevitably accompany change. The role of the group is significant in assuring a favorable outcome to this collegiate experience.

Groups, of course, do not depend for their existence on formal administrative sanction and implementation. But with the emphasis on the self-actualizing person and the significant influence of groups, it is a matter of concern that more effort is not made by educators to

provide effective group experiences as part of the college program.

There is little evidence that college administrators and faculty deliberately facilitate and collaborate with group development. They may either ignore it or attempt to counteract it. Current student reaction against authoritarian and paternalistic control and the emergence of informal action groups and communes among students are signs that new human relationships are sorely needed in today's institutions of higher education.

The purpose of this research, then, is to facilitate and assess behavioral development in college freshmen through a series of small-group experiences. Membership in the groups was drawn from a volunteer sample of the 1969 entering freshman class at Saint Mary's College, Winona, Minnesota. Groups were formed on the basis of complementarity of individual behaviors, namely, similarity of dominant personality type and dissimilarity with respect to auxiliary preferences. These aspects of personality are defined in Carl Jung's theory of type (Jung, 1924; Jacobi, 1962) and measured by a self-report inventory, the Myers-Briggs Type Indicator (Myers, 1962).

The group interaction process focused both on understanding one's own behaviors in relationship to those of others and on acquiring new behaviors manifested by others in the group. The specific behaviors of interest

in this research included attitudes, interests, and values related to normal student development in the college environment. In assessing the effects of small-group interaction on behavioral development, the research project used the Omnibus Personality Inventory (Heist and Yonge, 1968), an empirically derived inventory used primarily in longitudinal studies of college student development.

Scope, Definitions, and Assumptions

Although this study focuses on behavioral development which occurred as the result of small-group interaction, this does not imply that other settings, including individual ones, are not productive and beneficial. The research is exploratory in that it seeks to validate a particular strategy of group composition and process. For that reason, both the method of composition of the groups and the kind of behavioral change sought in the groups are objects of concern in this report.

Several basic definitions and assumptions are important throughout this research project. Man is seen as a self-determining organism capable of an unknown amount of development, depending upon the conditions within himself and his environment that allow for maximum individual development. The group strategy concentrates on the effect of other persons in combination with the individual's self-directing behavior. Other environmental

and hereditary factors, to the extent that they exist, are not the immediate concern of this study.

Human behavior is defined, in the broadest sense of the term, as an act, function, or reaction in response to any of a wide variety of internal and external stimuli. The whole range of human activity is encompassed by the word, behavior. The assumptions are that there are varieties of human behavior that contribute to self-actualization, that not all possible behaviors will necessarily be acquired to their fullest extent by all persons, but that maturity requires a flexible repertoire of behaviors which enables the person to be self-directing in his relationships with other persons and with his environment.

In terms of the goals of higher education, the assumptions are that the college should be concerned for the total behavioral development of its students and that intellectual development itself is best facilitated by the conditions that foster total human growth. A corollary point is that the traditional objectives of a liberal arts education, expressed in terms of freeing man and developing his potential, are in agreement with the student development point of view.

The limitations in this study are those common to all efforts of this kind. Sample size was limited by the number of freshmen who volunteered, by the distribution of behavioral types and preferences in the volunteer

group, by attrition in the sample, and by incomplete responses in the measurement procedures. In addition, the length of time allotted to the group sessions and to the training of group facilitators limited the effectiveness of the group as a stimulus for behavior change. The specific approach used in the group interaction involved a limited sample of group techniques. Other approaches, of course, are available and could be the object of additional analysis.

Throughout the study an attempt was made to carry out a reasonably sound research project in the context of an on-going academic program. Adjustments had to be made in location and schedule of meetings. The group facilitators, in particular, assumed an extra burden in addition to their academic program and senior thesis preparation. These are realistic conditions, however, which similar research must deal with in most colleges and universities today.

Hypotheses and Overview of the Study

Studies of human development and of the effects of group interaction on individual behavior suggest the major hypothesis that participation in small-group interaction will have an effect on student behavior. Similarly, both the theory of personality type and the variation in behavior that has been shown to exist among types of

persons suggest a corollary hypothesis that behavioral change will not be identical for all types of persons, or for all groups composed of similar dominant types.

The hypotheses of interest in this small-group behavioral development study can be stated in these terms:

1. Second-semester college freshmen who participate in small-group experience structured according to behavioral preferences and focused on behavioral development undergo greater change in attitudes and values than do nonparticipants.
2. Small groups formed according to complementarity of personality type, with similar dominant and dissimilar auxiliary functions present in each group, differ from one another in their patterns of change in attitudes and values as a result of the group experience.
3. Dominant-thinker and dominant-feeler groups, in which behavioral development focuses on the auxiliary functions of sensing and intuition, change significantly on OPI scales related to sensing and intuition: Thinking Introversion, Theoretical Orientation, Estheticism, Complexity, Autonomy, Religious Orientation, Impulse Expression, and Practical Outlook.
4. Dominant-senser and dominant-intuitive groups, in which behavioral development focuses on the

auxiliary functions of thinking and feeling, change significantly on OPI scales related to thinking and feeling: Thinking Orientation, Personal Integration, Anxiety Level, Masculinity-Femininity, and Response Bias.

Chapter II of this study presents a review of the literature in the fields of human development and personality, college student development, typological theory (especially that of Jung), the necessary conditions for human development, the role of the group in that process, and the factors which influence the group's effect on individual behavior (composition, size, and degree of security and stimulation).

The freshman population from which the research sample is drawn is extensively described in Chapter III. The two psychological instruments used in the study, the Omnibus Personality Inventory and the Myers-Briggs Type Indicator, are also discussed. Their validity is extended by their use in describing and comparing the Saint Mary's College freshman population in relation to national samples and to subgroups within itself.

In Chapter III the method in which various small groups are formed, the selection and training of group facilitators, and the outline of behaviors and strategies which are the focus of the small-group sessions are described. The chapter concludes with a presentation of

the hypotheses of the study and a discussion of the research design and the method of statistical analysis.

The analysis of the data from the post-test administration of the Omnibus Personality Inventory is given in Chapter IV, in terms of each of the four major hypotheses. An interpretation of the results follows the reporting of multivariate and univariate analyses of variance, together with significant post-hoc comparisons in those tests where significant effects are indicated.

A summary of conclusions is presented in the final chapter, together with implications for further research and practice in higher education.

CHAPTER II

REVIEW OF THE LITERATURE

The theoretical bases for the research undertaken in this project relate to the nature of the human person and to the processes of development that occur in the young adult of college age. Specifically, this chapter reviews relevant theory and research in personality (including human development and the theory of type), the role of the group, and the components and conditions of group development as they affect individual behavior.

Personality Theory

The study of human personality begins, as it ends, with life itself. In one encompassing statement, Rogers describes the essential postulate of the study of all living things:

> Whether we are speaking of this sea plant or an oak tree, of an earthworm or a great night-flying moth, of an ape or a man, we will do well, I believe, to recognize that life is an active process, not a passive one. Whether the stimulus arises from within or without, whether the environment is favorable or unfavorable, the behaviors of an organism can be counted on to be in the direction of maintaining, enhancing, and reproducing itself. This is the very nature of the process we call life (Rogers, 1963, 3).

Rogers, indeed, admits that it is more difficult to answer the question "why" this is so than to search out the more feasible scientific question of "how" this active principle manifests itself in human behavior. He describes the concept as "the organismic tendency toward fulfillment, the one central source of energy in the human organism" (Rogers, 1963, 6).

This active principle of human life is viewed by many students of human behavior as a generalized tendency toward fulfillment and self-actualization. Maslow (1962) reviews the common core of agreement among psychologists whose position is that human growth and development stem from this basic principle of life. In his view, all definitions of self-actualization accept or imply the awareness, acceptance, and expression of man's inner self and his potentialities. At the same time, self-actualization requires the relative absence of ill health, that is, minimum loss or diminution of basic capacities.

Thus, man not only behaves according to what he is, but also becomes according to how he behaves (Allport, 1955; Frankl, 1961). Change is not only inevitable but also beneficent. A tensionless state is inimical to human development, for change offers the chance to add to one's stature and dimensions. According to Frankl, however, man finds his highest significance in transcending himself, in looking beyond his own psyche as a closed

system to the fulfillment of potentialities which are to be found in the world at large (Frankl, 1961, 13).

Sociologists who subscribe to this same view of man speak of society as the means by which human development is fostered and maintained. Society, concerned with making people grow and mature, must create the conditions for the development of human productiveness (Fromm, 1947, 101). Behavioral scientists exert considerable effort in specifying the components of personal and social self-actualization. Genuine activity is seen as synonymous with mental health and brings about self-awareness and recognition of incompleteness. These factors, in turn, spur the development of ever-higher stages of activity and achievement (Singer, 1965, 75).

Erikson and White have delineated stages of personal-social development which capitalize upon the active nature of the organism, while also taking into account the manifold influences of the physical and interpersonal environments in which man exists. Erikson's discussion of developmental stages and his emphasis upon the interaction between the person and his social environment provide a conceptual framework for understanding the growth opportunities and crises which late adolescents face in their undergraduate years. Two of the stages in his model of human development, "Identity vs. Role Confusion" and "Intimacy vs. Isolation," relate specifically

to issues of personal growth in the collegiate setting (Erikson, 1963).

Sanford, whose work is in the tradition of Erikson and White, describes the development of "activist" psychology:

> R. W. White (1952), in summarizing much recent thought in the area of developmental goals, distinguishes four major "trends of natural growth:" the stabilizing of ego identity (with credits to Erikson), the deepening of interests, the freeing of interpersonal relationships, and the humanizing of values. This is reminiscent of the earlier effort by Allport (1937) to set down the marks of the mature personality: "extension of the self, self-objectification, autonomous interests, unified philosophy of life." Also to be mentioned in this connection is the "self-actualized person" of Goldstein (1939) and of Maslow (1954) (Sanford, 1966, 27).

Sanford adds a fifth general growth trend to White's list, "general development and strengthening of the ego." The process underlies the specific dimensions cited by White; it also subsumes a wide variety of developmental tasks and challenges which other behavioral scientists describe. Actually, White also speaks of a very general factor in describing his competence model of human development. The feeling of efficacy, or sense of competence, is a product of life experiences and applies to interactions with people as well as with the physical environment (White, 1960).

An active, developmental approach to human life has been adopted by a variety of influential behavioral

scientists, each operating within his area of special interest. Thus, Super's (1967) theory of career development as human development, Tead's (1951) insistence upon assertion as a necessary component of the mature administrator, and MacKinnon's (1962a, 1962b) research showing effectiveness and flexibility as essential ingredients of creativity all demonstrate a basic commitment to self-actualization in personality development.

In an article which has been widely quoted in the literature, Kubie cites the one quality which universally describes healthy, normal human behavior. His definition of this central feature can be applied in various settings, including those mentioned above.

> This clinically derived distinguishing trait centers around the freedom and flexibility to learn through experience, to change, and to adapt to changing external circumstances. Thus the essence of normality is flexibility (Kubie, 1954, 182).

Murphy adds a note of optimistic speculation by considering human development from the perspective of the future potential of the race "for the outgrowing of human nature" (Murphy, 1958, 7). Murphy is concerned with the future unlimited development of man; others view the current unrest in institutions of higher education in relationship to unfulfilled competence needs of students.

A major thesis of College Curriculum and Student Protest (Schwab, 1969) is that deficiencies in the

curriculum deprive students of the major human satisfaction of the experience of competence and, therefore, contribute to the overall student malaise and sense of frustration. Erikson has also pointed out the obverse side of self-actualization: when persons are kept in a dependent state, exploitation inevitably occurs. In fact, "the revolt of the dependent" against exploitation equally characterizes the developmental stage of the young (with its protracted dependence), the economic state of the poor, and the political state of the underdeveloped (Erikson, 1970).

Development in Young Adults

The theoretical position concerning overall human development stated above has been applied with greater precision, or rather, greater attempts at precision, to the hypothesized developmental cycle experienced by the young adult in college. Thus, White insists that the process of natural human growth cannot be understood without taking into account certain basic facts. Among these are the more or less continuous change a person experiences, the selective responses he makes to a multiplicity of influences, the action he takes on the environment, and the nature of the total environment in which human development occurs (White, 1952, 328).

Certain principles of behavioral development have received broad acceptance, because of their wide

applicability in various settings. These concepts summarize a wealth of research and experience; however, their power to give meaning to human behavior is not matched by an equal power to predict individual behavior in specific circumstances. Cronbach's basic principles are illustrative of this approach:

1. All aspects of development interact.
2. Physiological maturing prepares one to profit from experience.
3. Experiences have a cumulative effect.
4. Certain times in life are formative periods, which have a great effect on readiness for a particular activity (Cronbach, 1963, 89).

The stress in psychoanalytic theory and clinical analysis upon the developmental crises of infancy and childhood has been supplemented in recent years by increasing attention to adolescent and post-adolescent development. In addition to maintaining that development occurs throughout a person's lifetime, researchers have attempted to specify the processes of development that occur in these later periods of life. Development is considered, from this point of view, as additive and cumulative. A corollary principle is that a level of development once attained is not lost (Bloom, 1964).

A number of experienced researchers of college student characteristics unequivocally state their belief in a unique developmental stage of young adulthood. Some decry the emphasis on early determinism, as suggested by popularized Freudian theory, and suggest that students

coming to college do not realize that change is entirely possible. "They are very happy to discover that a wide range of choices lies before them, and this discovery serves as an impetus to serious consideration of the best directions for change"(Axelrod et al., 1969, 21).

Freedman is also optimistic about the possibilities of development in the college years. He suggests that the developmental phase of late adolescence may prove to be as significant for the attainment of maturity as the developmental stages of infancy and early adolescence (Freedman, 1965). The college years encompass this important developmental period and provide the last opportunity which many people will have for major change prior to the more fixed patterns of adult life (Sanford, 1962, 1967). Just as universal secondary education has created a high-school culture in which development can occur, so too will the apparent trend toward universal higher education create conditions necessary for a developmental stage unique to the college student totally immersed in the collegiate youth culture (Chickering, 1969).

In spite of rather wide acceptance of the theory of young-adult development, research has been handicapped by the lack of basic information about personality change and by the lack of appropriate measures for detecting such change (Bloom, 1964). Recent efforts, reviewed below, point out a variety of changes in college students,

depending upon various factors under study. Improvement in personality assessment measures, increased sophistication in statistical procedures, and a wider population available for study in today's colleges and universities should contribute to the effort to assess and predict change in college students.

Sanford himself admits, however, that "college students simply do not change as much as they should" and even that "too many of them apparently do not change at all" (Sanford, 1966, 276). The common assumptions concerning the amount, direction, and conditions of change have not been universally supported by experience and research. One researcher questions whether colleges should even be involved in encouraging students to change their values and attitudes. He concludes that "the answer to the question 'Is change in the values of college students desirable?' must be the well-qualified one that some changes are desirable in some students" (Dressel, 1965, 108).

A number of benchmark studies, beginning with Newcomb's (1943) research on the development of social liberalism among Bennington girls, document the existence of change and, to some extent, specify the necessary, though not always sufficient, causes of change. Studies of authoritarianism (Plant, 1958; Dressel and Mayhew, 1954) indicate significant decreases among students, even

though the general college environment does not specifically and strongly seek to bring about this change.

The conclusion that students' values become remarkably homogeneous as a result of college attendance (Jacob, 1957) is widely criticized, but also stimulates further research on the effect of college on student attitudes and values. One reaction to the Jacob report is that it simply demonstrates that "the American college has become enculturated to a point that limits its effectiveness" (Freedman, 1967).

Studies at Michigan State University indicate that students do change from freshman to senior year in a number of areas: increase in critical thinking ability, flexibility, and liberalism; decrease in authoritarianism, traditional values, and rigidity (Dressel and Lehmann, 1965). Two observations in this research occur again and again in other studies: the complex interactions which bring about change are very difficult to sort out, and different rates and directions of change are observed in individual students.

The Michigan State study indicates that change in student personality variables is positively related to length of time spent at the university. Other studies at San Jose State College replicate this finding and provide a significantly new research comparison: the availability of a control group of non-attenders and withdrawals (Plant,

1965; Plant and Minium, 1967). Significant differences exist between more and less intellectually able young adults in the relative degree of change in nonintellectual variables. The research calls into question the notion of college impact, however. Plant tentatively concludes that "the collegiate experience has a facilitative effect upon certain nonintellectual changes already underway in young adults who aspire to college attendance" (Plant, 1965, 271).

Longitudinal studies of change in personality test scores and of stability in their factor structure (Stewart, 1964), of diversified change in thirteen small colleges (Chickering, 1969), and of the impact of one highly distinctive liberal arts college (D. Heath, 1968) document the existence of change among various college student populations.

Trent and Medsker (1968) concur with Plant's modest view that colleges facilitate growth and development in young adults and that the growth of autonomy is especially characteristic of college persisters. The effect of college seems to derive from the provision of an environment which permits the student to experience new modes of behavior and to test his own behavior against a variety of challenges. The Trent and Medsker research on some 10,000 high school graduates indicates that early employment and marriage after high school seems to retard and even

suppress development of the personality traits measured, whereas growth and development in these areas (intellectual orientation, social maturity, complexity, and nonauthoritarianism) are generally proportionate to the extent of college attendance (Trent and Medsker, 1968, 261).

This research endorses the caveat expressed by Sanford and Plant: "It appears that college may provide the opportunity for students to grow, instead of making a conscious attempt to foster development" (Ibid., 177). The point is expressed even more strongly in the conclusion of the study:

> From both a theoretical and practical point of view, the data here reported do not fully substantiate the theories about post adolescent development . . . For a good many of the youths studied, there was no manifest post adolescent quest for self-identity. For most, self-identity appeared to be more a matter of family identity . . . Indeed, a great many of the youths appeared to have been affected by an early identity foreclosure (Ibid., 265).

On the one hand, the college experience facilitates development among students who are predisposed to develop. On the other hand, the college does not directly seek, nor is it able, to produce change in all students by any current strategy. This is the conclusion one derives from this and related research.

For example, there is scarcely any strategy in higher education more expensive to carry out or more noble in its intent that the Harvard House system originally sponsored by A. Lawrence Lowell. Yet, in spite of a

number of significant changes in various personality variables over the course of four years at Harvard, no significant differences can be ascribed to the factor of residence in one of the supposedly intense living-learning centers on the Harvard campus (Vreeland, 1970). Variables in which significant change occurs from freshman to senior year, according to the Harvard Student Study of the Classes of 1964 and 1965, include social behavior, self-esteem, interests, handling of moods, goal-directed activity, and integration and control of the personality (King, 1970).

Several comprehensive reviews of the literature on change in college students attempt to summarize the wide variety of studies (Freedman, 1960; Sanford, 1962; Lehmann and Dressel, 1963; Feldman and Newcomb, 1969). All of the researchers admit that a great deal still remains to be known about the effect of college on students. Feldman and Newcomb stress that the impact of college seems to be greatest "on those students who are ready to change either because they are psychologically open to new experiences or because they are open to the influence of others" (1969, 304). Besides noting the pervasiveness and uniformity of certain kinds of change across a variety of institutions of higher education, these authors point out that reinforcement and consolidation of personal characteristics are also significant impacts of college. Support for the theory of progressive human development over successive

stages is given by the conclusion that "the degree and nature of different colleges' impacts vary with their student inputs" (Ibid., 326).

Rate of Personality Change in Freshman Year

Studies of human development across a variety of environments, populations, and characteristics indicate certain periods when growth is quite rapid, as well as periods when little perceptible development occurs. Analysis of growth curves in a number of studies indicates significant changes in some characteristics in the early stages of the person's encounter with a markedly different environment (Bloom, 1964). A number of research studies on the collegiate environment substantiate the claim that "variations in the environment have greatest quantitative effect on a characteristic at its most rapid period of change" (Ibid., vii). In his survey of studies of general scholastic aptitude, Bloom found that, although a significant amount of growth occurs between ages 18 and 22, the major growth takes place in the age period from 18 to 20.

A similar early effect of the new collegiate environment is observed in other variables as well. Freshmen enter with relatively high academic expectations and idealism, but change rapidly within the powerful socialization matrix of the peer culture (Stern, 1966; Wallace, 1966; Martin, 1969; Finnie, 1970). Observed changes in

authoritarianism, ethnocentrism, critical thinking ability, and liberalism are stronger in the first year or two of the four-year college experience (Newcomb, 1943; Dressel and Mayhew, 1954; Lehmann and Dressel, 1962; Webster, Freedman, and Heist, 1962; Plant, 1965).

Because of these findings, observers of higher education emphasize the importance of the freshman year as a time when the pattern of the student's future development is established (D. Heath, 1968) and as an occasion for giving the freshman the confidence that he can, indeed, change in the direction of his own choosing (Sanford, 1962; Freedman, 1965). For this reason, the curricular experiences of freshman year should be especially adapted to this new stage of potential development (Katz and Sanford, 1962).

Although these studies show a greater prominence of change in the freshman year, change continues to take place throughout the college experience. In fact, Feldman and Newcomb conclude that, except for changes dealing with authoritarianism and related variables, the majority of studies do not point to a special rate of change in the early years of college (1969, 313). However, the evidence in selected studies, as indicated above, supports the efforts of those who seek to provide especially powerful stimuli to entering freshmen in their first year of involvement on the campus.

The overall pattern of research on college student development, corroborated by research on group development presented in a later section, proves that college students do not all develop in the same direction at the same rate. Both the amount and kind of change are related to the background characteristics of the student and to the features of the environment in which he lives. A significant question, then, for educational research and practice is whether any patterns of behavioral development exist within the multiplicity of measured outcomes. The search for such patterns involves a consideration of personality type.

Personality Type and Human Development

> In every psychology of the future, the chapter devoted to psychological types will be an increasingly important one. Between the individual and the species stands the type. The plan of personality is neither a standardized repetition of a uniform unit, nor a haphazard medley of mosaic; there runs through its designs a limited set of groupings (Jastrow, 1928).

The prophecy in this statement has not yet come true, judging from the reactions of American psychologists to the very idea of types or to the several extant typologies. European psychologists seem to have found the type approach more congenial, being "more inclined to arm-chair theorizing" (Stagner, 1961, 266). The predominant American aversion toward the typological point of view stems from a strong defense of individuality, a distrust of categories

and abstractions, and a lack of statistical verification of the presence of types in empirical studies.

Jastrow's quasi-definition of type is a useful starting point for the discussion and review of the literature on typology. It straddles the logical fence between unity and multiplicity, engaging in the philosophical debate that has exercised men's minds for thousands of years: the one vs. the many. All definitions of type, as well as the favorable and unfavorable criticisms of them, deal in some way or other with this dilemma.

The etymology of the word, "type," reflects the Greek concepts of "image" and "model," used in the ideal sense of representing the highest qualities of the species. Later trends toward realism and the evolution of the empirical method add a second aspect to the concept of type: empirically observed patterns of individual characteristics.

Type is variously defined as a procedure of classification (Chein, 1943), an observed constellation of traits (Eysenck, 1947, 1960), a category within a classification system (Murphy, 1966), an enduring disposition toward experiences and acts (Spranger, 1928), and an orientation in the study of individuals (Jung, in Evans, 1964).

Much of the controversy over types occurs in relationship to trait theory. Eysenck and Murphy relate the two concepts in an harmonious pattern of correlated

variables. Certain clusters of traits that cohere and are capable of achieving a dynamic unity constitute types (Murphy, 1966, 739). This is similar to Kretschmer's view that types are "focal-points of frequently occurring groups of characteristics, concentrations of correlated traits" (Kretschmer, in Eysenck, 1960, 12).

Allport's criticism of typology is among the most severe. Type is "a halfway approach to individuality, and nothing more" (1961, 16), an artificial category that exists only in the eye of the observer (1961, 296), and nothing other than a "superordinate common trait" (1961, 350). This criticism is particularly directed against empirical types, which Allport distinguishes from ideal types. Empirical types are useless because they duplicate information already recognized in the concept of "common traits."

While some authors speak rigidly about type and trait as entirely distinct constructs, others blur the distinction in an effort to combine the two aspects into a totality. In this view, the relationship of type to trait is a reciprocal one (Cattell, 1957). In other words,

> if types are conceived in terms of the relative dominance of certain characteristics within the individual, it is possible to harmonize type theory with the fact of normal distribution of measured traits (Stagner, 1961, 285).

The tendency, then, among American psychologists is either to reconcile the type concept with trait theory or to prove typology unscientific by evidence (or lack of evidence) drawn from measurement theory and empirical trait research. The most telling reply to the criticism that no typology meets the requirements of the hypothetical normal distribution is Eysenck's (1960). In his view, no knowledge of the unimodal or multimodal form of distribution for any variable is possible without a scientifically accurate measurement theory. Until such time as a proper measurement of personality characteristics is available, no argument against typology from the form of distribution can be regarded as relevant. Because the field of personality measurement is not able to offer a "proper metric," it does not appear possible to argue the merits of the type concept on this basis.

Because definitions of type tend to be couched in terms of boundaries and mutually exclusive categories, many of the negative reactions toward this approach reflect a concern for safeguarding the individuality of the person and for assuring empirical validation of the type.

One objection is that the sheer multiplicity of typologies makes them suspect, because each theory represents the special interests of its inventor. Moreover, the average person does not fit any of the type descriptions,

even though the common error is frequently made of attempting to classify everyone into types (Stagner, 1961).

Types are said to be out of fashion because behavioral scientists, trained in the methods of the physical sciences, concern themselves solely with the relationships between single variables. In addition, all type theories share in the criticism directed against certain outmoded ones, as well as in the accusation that typologies are "undemocratic" (Stein, 1963).

Hilgard (1962, 471) believes that, although satisfactory type theories are not impossible to conceive of, there still exist inherent dangers: type description tends to assert too much about the individual and to hold to outmoded conceptions of personality, besides neglecting the influence of culture. One opinion, however, is that types result from culture, that "there is reason to look for psychological types because the world in which we live is typed and produces different types of persons" (Adorno et al., 1950, 747).

Allport strenuously objects to any typology, because it abstracts some segment from the total personality but does not do justice to the individuality of the person. He characterizes nominalistic typologies as "devices for exalting the special interest of an author at the expense of the individual" (Allport, 1961, 349). In another place, however, he calls for a "complementarity of

investigators and theorists" to study the person from both specific and general points of view (1960, 239).

Another facet of the negative reaction toward types is the alleged difficulty of marking off the typical behavior. Different types seem to merge into one another, with the result that individuals are usually considered to belong to "mixed" types (Murphy, 1966, 735).

Type theory is criticized, in sum, for being abstract, statistically unverifiable, misapplied, outmoded, rigid, overlapping, and anti-individual. Against this array of criticism, what can be said in support of a theory of type? Some of the same critics do, in fact, provide justification for the use of a typological approach.

Opponents and proponents alike recognize that typology necessitates a degree of abstraction in its search for meaningful patterns of behavior. This fact is one of its claims to an honored place in behavioral science. Were it not for the pattern which the disciplined scientist senses long before he can confirm or disconfirm it, there would be no such thing as an advancing science (Polanyi, 1958). Hypothetical constructs are not only necessary for intellectual activity, but have led to the best success in predicting and explaining behavior (Sanford, 1966, 19). Rejecting all typological approaches amounts

to renouncing the conceptual medium itself (Adorno et al., 1950, 748).

Even the strongest critics of typological theories admit their productivity as starting points in personality research (Allport, 1961, 353) and their value as sources of hypotheses (Murphy, 1966, 749). As for the danger of forgetting the individuality of the person or of permanently placing people into frozen categories, these are faults of the typologist rather than inherent defects in the typology itself (Chein, 1943, 97).

Because there is a typological element inherent in any kind of psychological theory (Adorno et al., 1950, 748), the behavioral scientist might as well make it explicit, with a better prospect of integrating the existing knowledge of human behavior (Stein, 1963, 186). Some psychologists are engaged in the effort to verify statistically the existence of a typological dimension in human behavior, either through correlation techniques (McQuitty, 1967a, 1967b) or through factor analysis (Eysenck, 1960).

Allport's remark about the need for complementary approaches in the study of human behavior and Eysenck's statement below can even be viewed as a recognition of different "types of psychologists, insofar as their perceptual and cognitive styles are concerned:

> It may be surmised that a combination of the intuitive and often brilliant insight of the "typologists" and

> the precise and rigorous work of the statistician will in due course lead us to this one typology (Eysenck, 1960, 35).

These criticisms, advantages, and reservations about the typological approach provide a necessary background for considering the particular typology developed by Carl G. Jung (1924). Jung's personality typology must be distinguished from clinical typologies of maladaptive behavior (psychotic and neurotic types), as well as from constitutional typologies, such as those of Kretschmer and Sheldon (described in Harsh and Schrickel, 1959, 318-327).

Jung's work in the Psychology of Types is recognized as shadowy, metaphysical, and of a nature almost impossible to test in a laboratory situation (Bischof, 1964, 180). Nevertheless, his theory of types provides "an anchoring point for a frame of reference" (Stagner, 1961, 285) and offers "valuable hypotheses about individual differences which derive from unconscious dynamics" (Murphy, 1966, 20).

Lindzey and Hall, however, find no research generated by Jung's typology "adequate according to the criteria of objectivity, quantitative analysis, and the use of controls" (1965, 58). Another survey also concludes that "almost nothing exists of a scientific or laboratory nature which helps to interpret Jung's theory in the light of its capacity to make any meaningful predictions about man's behavior" (Bischof, 1964, 221).

One study indicates general agreement between the views of Jung and Rogers on various aspects of the concept of self-actualization, but reports very little research that pertains to Jungian concepts (Barefield, 1968). Jung himself recognized the difficulty of assessing the existence of types. He is said to have remarked, half jokingly, that one would have to wait thirty years after a person's death in order to say with certainty to which type he belonged (Brawer and Spiegelman, 1964).

Some reactions against the theory of types may have been heightened by failure to understand Jung's purposes and methodology in developing his theory. Almost two decades after the initial publication of his work on psychological types, he comments that,

> since it is my firm conviction that the time for an all-inclusive theory, taking in and describing all the contents, processes, and phenomena of the psyche from one central viewpoint, has not yet arrived, I regard my concepts as suggestions and attempts at the formulation of a new scientific psychology based in the first place upon immediate experience with human beings (Foreword, in Jacobi, 1939).

Although he admits inadequacies in the science of human behavior, Jung does not reject the possibility, even the necessity, of a scientific study of personality.

> The psyche is not a chaos made up of random whims and accidents, but is an objective reality to which the investigator can gain access by the methods of natural science (in Lindzey and Hall, 1965, 76).

In a conversation recorded in the early 1960s, shortly before his death, Jung again emphasizes that his typology is "just a sort of skeleton to which you have to add the flesh" and "merely a sort of orientation" (in Evans, 1964, 79, 71). Jung's remark that "the carriers of life are individuals, not average numbers" (Ibid., 111) and his more extended comment, reproduced below, about the tendency to categorize and over-generalize answer the criticism psychologists register against his typological approach.

> You know how people are. They have a catchword, and then everything is schematized along that word. There is no such thing as a pure extravert or a pure introvert. Such a man would be in the lunatic asylum. Those are only terms to designate a certain penchant, a certain tendency . . . And so with all the definite classifications, you know, they are only a sort of point to refer to, points for orientation. There is no such thing as a schematic classification (Ibid., 70).

One of the foremost interpreters of Jungian thought stresses that a psychological theory based on experience, like Jung's, can never come to a standstill. The theory of types is not a closed system, but one that is continuously open for new development and differentiation (Jacobi, 1962, Preface).

Jung's definition of type is more meaningful when considered against this background of commonly accepted definitions of type, positive and negative criticisms of the typological approach, and indications of his respect for flexibility and individuality in the scientific study

of personality. Type refers to a "characteristic model of a general attitude occurring in many individual forms." Insofar as such an attitude is habitual, it is a psychological type (Jung, 1924, 612).

Jung's theory is a positive, hopeful one, both for the individual and for an increasingly civilized race. His approach also recognizes development throughout the life cycle of the individual, and thus relates well to current theory and research on college student development (Bischof, 1964, 180). Jung himself places his theory in perspective, without making pretentious claims to having discovered the ultimate key to understanding and predicting human behavior.

> Through a consideration of the problem of typical attitudes, and the presentation of it in a certain form and outline, I aspire to guide my readers to a contemplation of this picture of the manifold possibilities of viewing life, in the hope that in so doing I may contribute a small share to the knowledge of the almost infinite variations and gradations of individual psychology (Jung, 1924, 621-622).

Jung also acknowledges that other classifications of habitual factors are possible, in addition to the particular set of attitudes and functions which he describes in Psychological Types. From his clinical observations and his comprehensive study of the cultural history of man, Jung concludes that the basic attitudes and functions he describes account for what at first appears to be random variation in individual and collective human behavior.

He welcomes suggestions from other students of personality as to other variables which might give meaning to his observations.

Three basic assumptions underlie Jung's discussion of the basic types. First of all, it is possible to find order in the diversity of human behavior. Secondly, every man, as a relatively stable being, possesses all the basic psychological functions, although he does not employ them in equal measure. (Perfect adaptation or perfect maturity means that all functions are equally highly developed.) Thirdly, each function has a positive value; it is the absence of a well-developed function that is "bad," not any particular function itself.

Thus, Jung's theory is in accord with a positive, hopeful, and developmental view of man, with a respectful cultivation of individuality and diversity, and with a recognition that individual development occurs throughout life, influenced by innate characteristics of the organism and by environmental challenges and opportunities.

Jung's Psychological Types (1924) describes two basic, habitual attitudes a person can take in the face of the world he experiences. Extraversion denotes an outward attitude, a tendency to relate to the external world of people, events, and objects. Introversion, on the other hand, is an habitual tendency to focus inward, giving primary attention to the world of personal thought, feeling,

and perception, bringing the external world into the transformed matrix of personal consciousness.

In Jung's theory two rational and two irrational functions comprise the four aspects of human orientation toward the chaotic abundance of stimuli which man experiences. Thinking and feeling are rational functions, because they are influenced by the motive of reflection. Thinking tells the person what something is; feeling tells him whether it is agreeable or not, accepted or rejected. Thinking judges on the basis of logic; feeling, on the basis of value. Both are in accord with the laws of reason. Feeling, a rational function, is not to be confused with emotion, which is nonvoluntary.

The irrational functions, sensation and intuition, aim at pure perception. The mode of perception in sensation is through the five physical senses. Intuition, on the other hand, is a perceptual mode that operates through the unconscious. Jung admits the difficulty of understanding how intuition works, for there is no direct means by which man can perceive intuition directly.

> Intuition--there is a difficulty, because you don't know ordinarily how intuition works. When a man has a hunch, you can't tell exactly how he got that hunch, or where that hunch came from. . . We have a lot of subliminal perceptions, sense perceptions, and from these we probably draw a great man of our intuitions. But that is perception by way of the unconscious (Jung, in Evans, 1964, 72, 74).

According to one commentator on Jung, thinking is concerned with efforts to describe or represent realities, whereas feeling is concerned with efforts to influence or interact with realities. The basic act and interest of sensation is with the detailed parts of what is perceived; conversely, intuition is most concerned with synthesis of perceptions into more comprehensive wholes (Marshall, 1968).

During the 1940s Gray and Wheelwright, two West Coast Jungian analysts, developed a questionnaire to assess the subject's preference for extraversion or introversion, thinking or feeling, and sensing or intuition. In a series of articles published from 1945 through 1949, they describe various samples of persons and their types in relationship to occupation, success in marriage, and frequency in the general population. (These articles are included in the bibliography.) The Gray-Wheelwright Inventory has not generated as much research and comment in the years since 1949.

One interesting point illustrates the possible application of Jung's typology to the study of therapists and theorists themselves. Gray suggests that it is significant how many of the ex-disciples of Freud, including Adler, Jung, and Rank, had intuition as a common factor, "while the polar opposite, sensation, was shared by the master and the loyal ring" (Gray, 1949a, 31).

In their investigation of the preferred functions of individuals, Gray and Wheelwright also determine whether the judging aspect (thinking or feeling) or the perceiving aspect (sensing or intuition) has priority.

> Is it this person's tendency first to perceive the world about him and secondly to base judgments on these perceptions or does he tend to pass a rapid opinion and subsequently make observations to enable him either to revise his judgment or to confirm it? (Gray, 1949a, 34).

The judgment-perception preference is one of the scaled variables in the Myers-Briggs Type Indicator (Myers, 1962), an instrument developed around the same time as the Gray-Wheelwright measure, but independently of their work. The MBTI is designed to measure the respondent's preference for attitude toward the environment (extraversion-introversion), perception function (sensing or intuition), judgment function (thinking or feeling), and process (perception or judgment).

Myers (1962, 63) defines type, then, as "that portion of the personality which people create in themselves by their exercise of the four preferences." Because the Indicator is used in the current study, more will be said in the next chapter concerning its use in the assessment of personality type.

Familiarity with Jung's typology gives the student of human behavior one frame of reference around which to organize individual observations and experiences. It

offers an alternative to measuring only single traits and suggests relevant issues for educational research, such as:

> What implications does differential academic performance attributable to personality characteristics independent of ability have for admission practices, for guidance, for classroom procedures, for curriculum planning, and for educational objectives? Are there biases in existing selection, teaching and examining technques which give a greater advantage to certain personality types, at the expense of others? (Stern, Stein, and Bloom, 1956, 227)

The typological approach is particularly helpful in a setting which recognizes differential development. All functions are valued, all are capable of further development, all contribute to the diversity of behavior required for living a full life. What is more, as a review of group-related research indicates, development seems to occur best when a variety of behavior is available for modeling and imitation.

Traditional education emphasizes and rewards a few cognitive behaviors. Students of differing talent should all find rewards in the educational experience for those behaviors which they have already developed. They should also be assisted in overcoming deficiencies in other desired behaviors (Schwab, 1969, 96-97). The differential rate and direction of change which research has shown to exist among college students indicate that a uniform, normative approach to human development overlooks a significant fact. Different types of students

develop in different ways because they already are different and because they seek to develop certain new behaviors which are currently of greatest importance to them.

A knowledge of the conditions necessary for facilitating human development is required if educational institutions are to provide the environment that will best enhance learning in various types of individuals. Fortunately, current theory and research offer some guidelines for sound educational policy and practice.

Conditions for Development: Security and Stimulation

All that has been said about human development, in its various stages and manifestations, implies that the person moves from one "level" of behavior, through some kind of experience which "changes" him, to subsequently higher and increasingly differentiated stages of development. The creation of an increasingly mature identity is fostered by conditions of security (relative freedom from anxiety and pressure) and stimulation (varied direct experience and achievement). This dynamic interaction between security and stimulation is the keystone to the establishment of identity (Erikson, 1950) and the development of maturity through the college experience (Sanford, 1966).

Borel offers the concept of security as the primary motivation for human behavior: "an inherent striving

to reduce environmental situations to cause-and-effect relationships and thus enable the individual to predict and control these situations" (1964, 108). Sanford develops this approach further; he suggests that the appropriate blend of security and stimulation in an individual's life is what determines his satisfactory development.

> We could run an institution in the interest of positive mental health that would so protect individuals from challenging stimuli that they would not develop at all.
>
> We have to find challenges that are sufficient to require that the individual make a really new kind of adaptation, but not so intense or disturbing as to force the student to fall back on earlier primitive modes of adaptation which will serve him badly in the long run (Sanford, 1963, 11, 13).

An institution which seeks to change people, that is, to educate them, must therefore provide its students with strong challenges, accurate appraisal of their ability to cope with the challenges, and sufficient support during the process of change (Sanford, 1966, 46). What educators call "readiness" is analagous to security, for it permits the individual to adopt new behaviors in the face of stimuli that require new kinds of responses built upon previously learned behavior. Sequences of differentiation and integration occur throughout an individual's lifetime, as he develops new competences and reintegrates his experiences within the personality (Sanford, 1962, 257).

The need of persons to obtain security and to profit from stimulation, as well as the necessity of institutions

to provide the necessary conditions for sequential growth, is a common theme among psychologists and sociologists. In a rapidly changing (and, therefore, highly stimulating) technological society one necessary mode of behavior is "empathy," defined as "a high capacity for rearranging the self-system on short notice" (Lerner, 1958, 51). And if, according to Benedict, individuals are favored whose behavior and potentialities coincide with the predominant behavioral style of their society (1934, 255), it is essential that educational institutions provide persons with opportunities for developing flexibility and adaptability in the face of the vast array of stimuli which impinge upon modern man.

"Man's greatest problem" writes Carl Rogers, "is his ability to assimilate change" (1968, 265). The educational institutions which are charged with the responsibility of facilitating human development, however, seem to show a greater resistance to change than does any other institutional group, according to Rogers. Elsewhere he describes the kind of educational environment which can most effectively promote human development. It is one which combines the two necessary elements of security and stimulation: "threat to the self of the learner is reduced to a minimum, and differentiated perception of the field of experience is facilitated" (Rogers, 1965, 391).

In a recent clarification of his use of the term "identity diffusion," formerly used in the pejorative sense of "confusion," Erikson states that the adolescent ego needs a certain diffusion. This results, one might suggest, from stimulation, "experiences in which some boundaries in the self are expanded to include a wider identity, with compensatory gains in emotional tonus, cognitive certainty, and ideological conviction" (Erikson, 1970, 162).

The necessity of stimulation for human development is stressed in Piaget's (1952) concept of environmental "stimulus nutriment" and in the research of Schultz (1965) on sensory deprivation and Levitt (1967) on individual variations in anxiety. The latter two authors stress that individuals who have greater anxiety and are therefore more easily stimulated also have a greater need for a secure environment and a lesser need for stimulation.

This relativity of stimulation and security needs complicates the educational process, for both the kinds of learning experiences, or challenges, and the timing of them are different for different individuals (Axelrod, et al., 1969, 26). Douglas Heath suggests that the faculty analyze carefully how it can best "disorganize" the entering freshmen, while providing powerful educative supports, so that the disorganization will be maturing rather than immaturing. He goes so far as to say that

"failure to produce such disorganization in the first weeks of college probably means the college has lost the optimal opportunity to educate its students" (1968, 262).

Two recent studies of innovation and reform in colleges and universities also apply the concepts of security and stimulation. In Dynamics of Academic Reform Hefferlin concludes that institutional change occurs only when the expected reward of change outweighs the reward of stability. "Both in the individual and the organization, change is accepted when it seems the least of all possible evils and more desirable than any other alternative" (1969, 19).

The Carnegie Corporation study of the future of liberal arts colleges (Keeton and Hilberry, 1969) states that the campus culture is most likely to educate a student liberally when the student experiences a sharing of attitudes and values and, at the same time, has this security challenged by enough strangeness to force his ideas and competences to expand.

After extensive summary of and comment upon forty years of research on the impact of college on students, Feldman and Newcomb suggest some conditions for effective higher education. They describe the ideal relationship between student and college as "a continuing series of not-too-threatening discontinuities" (1969, 295). Borrowing a phrase attributed to Kurt Lewin that "it is often easier to change a whole group than a single individual," they

insist that the necessary conditions of mutual stimulation and support must be realized in interpersonal terms. In order to implement this approach, the college should organize itself horizontally into interpersonal groups of optimal size, no matter what the total population of the institution might be (Ibid., 337).

Reliance on the interpersonal group is well justified, as the next section will indicate, for in the group the same ebb and flow of security and stimulation take place: "Too much anxiety is disintegrating to the organism. Too little anxiety makes a person unwilling to abandon his usual approach" (Whitman, 1964, 313).

Necessity of the Group for Human Development

Berelson cites one list of basic human needs (written by Thomas in 1923) which has been influential in twentieth-century psychology: security, recognition, response from others, and new experience (Berelson and Steiner, 1967, 161). Security is related to personal territory, as Ardrey points out (1966), and is also enhanced by group membership: "There is nothing so moving . . . as the discovery that one is not alone" (Ardrey, 1966, vi). Recognition and response from others can also be provided by the group, as well as the stimulating effect of new experience.

The stress on individualism in America's competitive society, the popular concept of evolution as the survival of the fittest, and the structural emphasis in higher education on separate academic disciplines, on grading systems, and on other certifying devices combine to reduce or extinguish the role of the group in furthering human development. Although the fundamental importance of human groups has been overshadowed by the cult of individualism, "what makes man human derives from the fundamental fact that he lives with other people" (Berelson and Steiner, 1967, 53).

Behavioral scientists and philosophers alike agree on the necessity of the group. As Martin Buber writes, "The basis of man's life is twofold, and it is one--the wish of every man to be confirmed as to what he is, even as to what he can become, by men; and the innate capacity in man to confirm his fellow men in this way" (Buber, 1957, 101). Speaking of the interrelated needs of men, one therapist states that

> like the initial process of humanization, the maintenance of personal humanity requires other human beings.
>
> The evidence from studies on sensory deprivation, both anecdotal and experimental, is that the human being whose nature is not continually reinforced by other persons loses at least temporarily some of his most complex psychological abilities (Forer, 1969, 29).

Dewey argues that individuality itself is not a given condition in man, but rather that it is created

"under the influences of associated life" (Dewey, 1957, 155). Similarly, George Herbert Mead's classic work, Mind, Self, and Society (1934), develops the thesis that man's distinctive features of mind, self, and consciousness emerged as internalizations of the processes involved in social cooperation. Even in the field of executive administration where bureaucracy is sometimes said to run rampant, a well-known theorist argued decades ago that the key to successful organization involves the development of small groups and their integration into the formal organization (Barnard, 1938).

The small group fulfills a number of important needs of its members: obtaining and evaluating information about themselves and their environment, creating situations which directly affect the behavior of members and non-members alike, satisfying a deep need for affiliation and affection, and defending against forces which members, as individuals, can not (or will not) resist (Golembiewski, 1962).

The emphasis on the importance of the group should not be taken to mean, however, that solitude and single relationships have no place in human development. Each of these structures--solitude, single relationships, and group experiences--is an essential human value. Full self-actualization, according to Moustakas (1968, 101), requires experiencing and valuing all of these human situations.

Tillich (1963) develops the theme that two words were created in the English language to express the two sides of man's aloneness: "loneliness," to express pain in being alone, and "solitude," to express the glory of being alone.

One therapist contends that American society deliberately violates this basic insight about human nature, "that it is the relationships which prevail among men as individuals and as members of a structural society that ultimately determine their basic states of mental health and spiritual well-being" (Kraft, 1964). Environmentalists and ecologists speak of the crisis in the human condition brought about because of man's failure to live in harmony with his fellow men and within the total environment (Commoner, 1968). Critics of American education speak of interpersonal skills as crucial to the survival of the race and castigate the schools for having systematically depersonalized education by their emphasis on individualism and competition (Leonard, 1968).

The nineteenth-century concept of competitive evolution has long been supplanted among scientists by a cooperative, inter-dependent, and ecological view of evolving life (Wheeler, 1922; Allee, 1938). Similarly, modern approaches in business and industry, increasingly distrustful of and disenchanted with authoritarian and bureaucratic management, are using group processes and human relations

training experiences, motivated by both humane and economic considerations. The literature of modern democratic management, picking up Barnard's neglected insight, shows much concern with the interaction among persons in groups (Tead, 1951).

The growth of human relations training programs has been stimulated and supported more by business and industry than by educational institutions (Rogers, 1968). Adults in various occupational roles are trying to compensate for deficiencies in human development which were not corrected in the educational institutions supposedly charged with the task of preparing young people for leading full, human lives.

In the therapeutic professions as well, group processes have emerged as significant strategies in influencing human behavioral development. Moreno (1966, 152), in fact, considers group therapy the third psychiatric revolution. Zerka Moreno's review of group therapeutic methods covers some forty-seven different approaches (in Moreno, 1966). In his preface to The New Group Therapy, Mowrer emphasizes the trend:

> Now there is a growing realization, both in lay and professional circles, that the crucial element in "mental health" is the degree of "openness" and "communion" which a person has with his fellow men. This, more than anything else, determines whether we, as persons, will prosper or perish (1964, iii).

The effect of the group extends beyond the strictly therapeutic, however. Bandura, for example, summarizes the views of Lazowick, Parsons, and Mowrer in his discussion of various approaches to social learning in theories of personality and behavior. In every case, "others" are highly significant in "the tendency for a person to match the behavior or attitudes exhibited by actual or symbolized models" (Bandura, 1962, 215). Groups have powerful effects on individual behavior because they frequently are able to reward and punish and because human beings want and need each other (Newcomb, 1966).

The role of the group in the college environment has become a topic of increasing significance. Heath's developmental study of Haverford students indicates the profound loneliness of many students amid the swirl of campus activity. His conclusion is that "the most persuasive determinant of personality change is another human being whom one respects or toward whom one must adapt" (D. Heath, 1968, 224). Chickering, in the Project on Student Development, notes that variables among institutions such as size, purpose, curriculum, and living arrangements, have an effect on development because they influence "the frequency and intensity, the content and contexts, of interpersonal encounters and relationships" (1969, 232).

The group processes referred to in these comments are not wholly a matter of deep mystery nor an area in

which colleges should fear to tread. Kemp's review of developments in the study of small groups supports the position that educators can trust group experiences to be of significant influence in the personal development of students.

> The study of small groups has moved in succession from one level to another: from an analysis of the nature of the group, to observation of the process, to analysis of the functioning of leaders, to the study of the behavior of individuals in the group, and to the slowly dawning recognition and acceptance of the interdependence of the members and the responsibility of each to contribute to the welfare of the whole (Kemp, 1964, vii).

The necessary conditions for creating a group climate which facilitates the learning of new behaviors have been enumerated in the literature on group process. These conditions include exposure of a person's behavior to himself and to others, valid and caring feedback to the individual concerning the effects of his behavior on himself and others, a supportive atmosphere which allows the individual to accept and process this relevant data, and provision for exploratory behavior directed toward modification of the person's repertoire of behaviors (Bigg, 1958; Gibb and Gibb, 1968, 1969). Shepard summarizes the same concepts as "valid communication, observant participation, process analysis, and experimentation with new behavior and new structures" (1964).

Research on small-group processes has accumulated to the extent that generalizations can be made about the

sequence of events and about the kinds of interaction that regularly occur. Four general stages of development have been observed across some fifty studies and observations of group development. For interpersonally oriented groups, the developmental sequence encompasses testing-dependence, conflict, cohesion, and functional roles. For task-oriented groups, the stages are described as orientation, emotionality, relevant opinion exchange, and emergence of solutions (Tuckman, 1965). The reviewer recognizes that therapy groups are very overrepresented in the literature, whereas laboratory or T-groups and natural groups, not to mention groups in educational settings, are underrepresented to a considerable degree.

Group Composition and Size

Because considerable research has been directed toward assessing the degree of homogeneity, complementarity, or heterogeneity in groups, this review will consider group composition, together with the related problem of size, prior to a discussion of the effects of group experiences on various behavioral outcomes.

One of the more influential theories of interpersonal attraction is Festinger's concept of "social comparison processes." The basic hypothesis is that, in the absence of objective, non-social means, people evaluate their opinions and abilities by comparing them with the

opinions and abilities of others. A corollary is that the individual will be less attracted to personal and social situations where others are very divergent than to those where others are similar to him in opinions or abilities (Festinger, 1954).

Studies have sought to test the similarity-dissimilarity hypotheses in pair and friendship situations, in counselor-client interactions, and in small-group encounters, whether interpersonal or task-oriented. Because observable patterns and inconsistencies have been reported in each category, the research is not entirely conclusive.

An early study of friendship choice concludes that an average rate of about two-thirds similarities and one-third dissimilarities is typical (Bogardus and Otto, 1936). Studies relating similarity to friendship have dealt with perceived or actual similarity in attitudes, traits, and values. Similarity in these areas has been found to be one of the most important determinants of attraction (Newcomb, 1943, 1961; Rokeach, 1960).

Some qualifications must be made about the similarity effect, however. Dissimilarity between an individual and his friend can be a source of attraction when the dissimilarity represents behavior which is highly valued by the individual (Beier, Rossi, and Garfield, 1961). Similarity may also be more influential in the formative stages

of friendship and less critical as the relationship grows (Peters, 1969).

A number of studies show a positive linear relationship between similarity and attraction (Precker, 1952; Byrne and Clore, 1967; Griffit, 1969). However, incompatibility may be both avoided and sought for by the same subjects in different role relationships, as in choice of neighbor and choice of boss (Rychlak, 1965).

Attraction is facilitated by similarity, by complementarity, or by some combination of the two. Similarity is associated positively with attraction under certain conditions, in specific groups, and with respect to selected variables. A number of studies, however, find no relationship between personality similarity and attraction. One review describes the reason for such inconsistency of results: "the peculiar penchant of personality and social psychologists for methodological creativity such that almost every investigation represents an exploration in procedural novelty" (Bryne, Griffit, and Stefaniak, 1967, 83).

Three studies use the Myers-Briggs Type Indicator (Myers, 1962) to measure similarity between counselors and clients in educational settings. Ideal clients, judged so by counselors, are similar to their counselors on the Extraversion-Introversion and Judgment-Perception scales of the Myers-Briggs (Thompson, 1969). In a study later

replicated, the investigator reports that counselor-client similarity, which is significant on the Myers-Briggs Judgment-Percpetion scale, is positively associated with greater duration of counseling. Similarity is judged a necessary, though not always sufficient, condition for continuation of the counseling relationship (Mendelsohn and Geller, 1963; Mendelsohn, 1966).

Somewhat contradictory results occur in another study, in which interest similarity between counselor and client is positively related to the counselor's initial liking for the client, but is not significantly related to other variables such as duration of counseling, counselor's and client's ratings, and measured outcomes of counseling (Fosshage, 1968).

Research on the effects of homogeneous, complementary, or heterogeneous groups is more extensive than that in the areas of friendship-attraction and counseling. Several reviews of the relevant studies indicate that group composition has an effect on a number of behavioral outcomes. The description of groups as either homogeneous or heterogeneous is very common in the literature, but the choice of variables upon which similarity or dissimiliarity is decided undoubtedly affects the conclusions.

Stock (1964) concludes that heterogeneous groups are likely to be less efficient in problem-solving because of higher levels of negative affect (frustration and

anger) and decreased perceptual accuracy. Haythorn's (1968) review, on the other hand, cites evidence in favor of the superior ability of heterogeneous groups to perform certain tasks. He suggests that greater specificity is required in describing the criteria and composition relationships of groups.

Harrison and Lubin (1965) conclude that homogeneous groups do not seem to provide the confrontation with alternate perceptions and ways of behaving which are needed for optimum change and growth. Such groups do, however, provide necessary support and security under certain conditions.

One explanation for the inconsistency of results in studies of group composition involves the distinction between interpersonal and task groups. The superior problem-solving effectiveness of heterogeneous groups has been found to coexist with positive attraction among their members (Hoffman, 1958). It is possible that the factors which determine group attraction are those most closely associated with the members' values: congeniality in the case of social groups, task effectiveness for work groups (Hoffman and Maier, 1966). This hypothesis agrees with Newcomb's (1961) view that interpersonal attraction is a function of similarity of attitudes concerning objects of high importance to the persons involved.

In one comparison study of homogeneous and heterogeneous T-groups, the investigator reports that homogeneous groups experience greater initial cohesiveness and attraction than heterogeneous groups, but that the difference dissipates over the course of the group experience. In addition, heterogeneous group members manifest more positive changes in interpersonal behaviors than do members of the homogeneous groups (Pollack, 1967). McCary (1970), after reviewing a number of studies of homogeneous groups, points out both the pleasurable and the distressing potential of homogeneous groups, depending upon the variable which defines the similarity.

Similarity may also be a handicap to a group if it results in the absence of stimulation. "If all members are alike, they have little to talk about, they may compete with each other, or they may all commit the same mistake" (Shepherd, 1964, 118). Whereas similarity seems necessary as a condition for early cohesion in the group, heterogeneity aids the accomplishment of tasks and proves more enriching, if the members invest sufficient energy and trust into the situation (Anderson, 1969).

Differences among homogeneous, complementary, and heterogeneous groups indicate the advantages that can accrue to successful groups blessed with variety:

> The complementary group reported that they would be more willing to volunteer again for a self-understanding group, understood themselves better after the group

> experience, and had their expectations fulfilled by the group experience to a greater extent than the homogeneous group members. (B)oth complementary and heterogeneous groups indicated a significantly greater desire to continue their present group experience than the composite homogeneous group (McCary, 1970, 114).

These significant differences are observed on self-report measures. No significant differences exist, however, among the three types of groups on change scores of the Tennessee Self-Concept Scale and the Trait Anxiety Inventory. Results from the Barrett Lennard Relationship Inventory also show no significant differences (McCary, 1970).

The amount of similarity and dissimilarity in groups seems to have effects analagous to those discussed above in connection with the basic security and stimulation needs of the human person. If the stress caused by dissimilarity among persons (increased stimulation) can be effectively converted into energy for trying out new behavior, the group experience will be productive. If too much anxiety is called forth by the group experience, that is, if the individual's security is overly threatened, the individual may withdraw or otherwise defend himself. The research is not clear as to the appropriate mix of security and stimulation, of similarity and dissimilarity, in a given case. The evidence points to the importance of this factor, however, and suggests that serious attention be paid to the matter of group composition.

Another factor which causes complex interaction effects in small-group research is the size of the group. Suggestions have been made that the optimum group size is from four to seven (Shepherd, 1964) and that optimum group size depends significantly on the physical space in which the interaction takes place (Gibb and Gibb, 1969).

Studies of problem-solving groups indicate that as group size increases,

1. the absolute rate of interaction for any given member tends to decrease;
2. the proportion of infrequent contributors to the group interaction increases;
3. more members report feelings of threat and inhibition regarding participation;
4. giving of information and suggestions increases and asking for opinions and showing agreement decreases; and
5. more statements are directed to the leader than to individual members (Goldstein, Heller, and Sechrest, 1966).

In point of fact, group size in most studies is determined by the exigencies of the situation. There is little evidence of studies planned with group size as a major independent variable.

The effects of group composition and size are inextricably bound up with the overall effects of group participation. Research on the effect of groups in which composition and size are not controlled or not specifically considered in the analysis will be reviewed in the following section.

Effects of Small Groups

Because groups are essential in providing the necessary conditions of security and stimulation requisite for human development, it is to be expected that the effects of groups derive from those same conditions. A healthy group, one which supports and fosters change, provides frequency of interaction, active concern toward changing members, high degree of member attraction to the group, strong group solidarity, the use of sanctions, and relative isolation from competing influences (Gamson, 1969).

Theories of social learning, modeling, and imitation point out the importance of other persons in supportive groups as sources of patterns of behavior. Bandura (1962) discusses a wide range of theories and studies on imitative learning, all of which are relevant to the study of group effects and to the use of group strategies in developing new behaviors. The theory of cognitive balance also predicts that groups will have significant effects on member behavior, primarily because of the tendency to produce positive sentiments among individuals who perceive themselves as part of the same social unit (Deutsch, 1962).

A spate of research on the effects of group desensitization on test anxiety indicates that significant reduction in anxiety and, in some cases, increase in academic

performance occur among students who experience group behavioral therapy of this type (Katahn, 1966; Cohen, 1968; Donner, 1968; Garlington and Coller, 1968; Laemmle, 1968; Suinn, 1968; Weinstein, 1968).

Research indicates that groups significantly affect participants' behavior: increase in self-directed behavior change (Kolb, Winter, and Berlew, 1968); impact on attitudes and values (Bowers and Soar, 1960); acceptance of greater risk (Madaras and Bem, 1968); increase in self-esteem (Dyer, 1967); positive approach to learning (McKeachie, 1962), and creative applications of knowledge (Wilson, 1966). On the other hand, no effects are observed as a result of college students' participation in a T-group experience (Johnson, 1966) and voluntary group counseling with college underachievers (LeMay, 1966).

Similar to Feldman and Newcomb's (1969) conclusion, that the impact of college on students differs according to the characteristics of the students themselves, is the evidence that human relations experiences change people selectively, depending on their initial personality (Schutz and Allen, 1966). Flexibility and openness are important attributes in the facilitation of a person's ability to gain positive change in the group encounter (Miles, 1960; Whitman, 1964). Persons high in authoritarianism are likely to respond poorly to the unstructured

environment that is typical of many small-group experiences (Katz, 1968).

Whereas all of the following behavior has been shown to be influenced by group experiences, the reviewer stresses that the changes occur only for some people under certain conditions:

> various perceptions of the self, affective behavior, congruity between self-percept and ideal self, self-insight, sensitivity to the feelings or behavior of others, role flexibility, sensitivity to group decisions, diagnostic ability, behavioral skill, utilization of laboratory techniques, self-confidence, and approach to diagnosing organization problems (Stock, 1964, 434).

Studies of small-group interaction on the college scene, outside of those which concern group counseling of underachievers and group desensitization of anxiety-prone students,are rare. Groups which profess to enhance behavioral development of college students in general are not much in evidence. One study of the effects of informal, faculty-student, small-group interaction reports significant change on the Altruism scale of the Omnibus Personality Inventory but not on the other scales (Alberti, 1969).

Articles recommending small group procedures in college orientation, in working with potential dropouts, and in counseling urban students offer impressions of success and positive self-report, but do not make use of statistical controls (Pappas, 1967; Smith, 1964; Stern,

1968). These and other studies suggest group strategies that can have a positive influence on student development. Much more needs to be done in planning and testing imaginative strategies in the collegiate environment to capitalize upon the proven effects of small-group interaction. The effort bears promise of success, in view of previous research and in light of the demonstrated effects of peer group behavior on student development.

Peer Influences

The adolescent, like all human beings, is eager to be affirmed by his peers (Erikson, 1963). The process of formal education in American society contributes to the growing strength of the peer group effect on individual behavior. For example, the proportion of secondary school students identifying friends as significant others increases in the later school years (Brookover, Erickson, and Joiner, 1967). By the senior year in high school, peer influences on college plans have a greater effect than the socio-economic background of the student (McDill and Coleman, 1965).

With the advent of college matriculation, the student rapidly comes under the influence of the collegiate student culture, "the prime educational force at work in the college" (Freedman, 1956). This peer influence is particularly great in American society, Freedman suggests,

where status and security depend in large measure upon relationships with one's peers.

The peer group's effect extends to a wide variety of behaviors: academic, intellectual, social, political, aesthetic, and emotional (LeVine, 1966). Although faculty influence is clearly evident in the areas of intellectual development and occupational and career decisions, fellow students exert greater influence in matters of social and interpersonal development (Feldman and Newcomb, 1969, 258).

Precollege acquaintance, propinquity in residence and class assignments, and similarity of attitudes and interests are cited as the primary conditions of peer group formation. Among the conditions that facilitate the powerful effects of peer groups are the size of the group, its homogeneity with respect to valued characteristics, its relative isolation from groups having divergent norms, and the importance to individuals of group-supported activities (Newcomb, 1966).

These conditions and factors are supported by research on friendship formation and small group processes. On the basis of his analysis of the effects of the peer group, Newcomb urges that the group environment become a consciously manipulated variable to promote educational objectives (1962).

In one study, students whose academic-vocational goals are in the minority among residents of a university

hall change their majors, to a significant degree, to fields similar to those of the majority group. Of those in the minority group who do not change majors, significantly more become less certain of their vocational goal (Brown, 1968).

The Harvard Student Study (Vreeland,1970), attributes no significant effects to the Harvard House system. In spite of elaborate plans for faculty-student interaction, small living groups, and intellectual and cultural interaction, the factor of residence in a particular house makes no significant impact on student development. The results indicate, however, that a student's background and personality influence his choice of friends in freshman year (before house membership is determined). These friends, in turn, are an effective influence on the student's further development, for the small roommate-suite group within the house is the strongest variable.

An investigation of informal student groups at the University of California at Davis reports that small size and homogeneity are the characteristic features. Intellectual discussion, or what may be called "stimulating" discussion, is more likely to occur in heterogeneous groups, but these tend to be larger and more inhibited in interaction. The researchers suggest that provision be made for creating groups of requisite size and dissimilarity

to provide the type of stimulating interaction that will foster student development (Bolton and Kammeyer, 1967).

Several proposals for innovation in higher education include the small-group experience as a key element. Studies of effective plans to reduce the dropout rate in college show that housing situations which provide easy contact with other students facilitate retention (Suczek and Alfert, 1966). Student personnel workers are advised to note the growing evidence that today's students are more interested in forming small, primary group relationships on campus than in joining large, traditional, formal organizations (Mayhew, 1962).

Use of the term "primary group" has been suggested by Axelrod (1967) to indicate the importance of a small, meaningful, non-competitive identity group to which every college student can belong and from which he can move out to encounter a variety of educational resources within the college. The development of primary groups is the first step in the Experimental Freshman Program at San Francisco State College and in an experimental college model proposed as a response to the crisis in contemporary higher education (Axelrod et al., 1969).

Mayhew applies the concepts of social learning and role models to the effect of the peer group on college students. He suggests that the college recognize the phenomenon of identification and establish student groups,

for academic purposes, in units small enough to allow intimacy to develop (Mayhew, 1969, 137).

A promising factor of intervention and change is the influence, both actual and potential, of the upperclassman on the freshman student. Data from a National Opinion Research Center study of the socialization of college freshmen indicate that nonfreshmen (older peers, strictly speaking) are highly influential (Wallance, 1966). What a distinguished psychologist has to say about new modes of student interaction has great significance in considering the untapped potential of the more experienced, more developed students for assisting in the development of younger students:

> If the older young people could find the courage in themselves--and encouragement and guidance from their elders--to institutionalize their responsibility for the younger young, we might see quite different images of both youth and young adulthood emerge than those we now know (Erikson, 1970, 174).

If small groups are influential in fostering student development, as they seem to be, there is ample reason to involve other students as behavioral models and facilitators in this kind of interpersonal experience. There is even some evidence that the physical presence of a professional therapist is not necessary for group and personal growth (Gibb and Gibb, 1968).

A study of group desensitization treatments shows that first-year, inexperienced graduate students in

psychology perform as effectively as group leaders as the professional therapists who hold doctor's degrees in their field (Thoresen and Neuman, 1968). A project among Detroit's inner-city high school students demonstrates the effectiveness of trained peer leaders in bringing about better academic performance and more positive attitudes and values (Vriend, 1969).

These studies from different settings do not, of course, deny the necessity and value of professional training. They do point out, however, that there are personal resources available on the campus in addition to the traditional adult staff, which is usually short in supply and lacking the time and training for long-term group work.

Undergraduate assistants, for example, are employed in residence hall programs and contribute distinctive behaviors to the student personnel staff:

> a youthfulness, an enthusiasm and fresh approach to residence living, a willingness to learn, a receptiveness to new ideas, a loyalty and involvement in the college, and easily recalled experiences as college freshmen--all factors which open the way for close communication and interaction with fellow students (Greenleaf, 1967, 12).

The effective role which an upperclassman teaching fellow, seminar leader, or undergraduate instructor can play in the college instructional program is demonstrated by a number of special programs that have great potential as models for the future (Schwab, 1969, 294; Axelrod et al., 1969, 159; Smith, 1969). There is every reason to believe

that seniors in college can be effective in certain kinds of small-group interaction with freshmen. The degree of difference in behavioral development indicates the senior's competence to relate to "the younger young" while he himself continues to develop as well.

Summary

This review of research and theory covers a wide range of human developmental concerns, beginning with the basic position that man is an active being in a state of becoming. Certain periods in life seem to offer special opportunities for development, as well as particular hazards. Although research on college students does not indicate universal change in consistent directions and patterns, there is sufficient evidence to suggest that the period of young adulthood or late adolescence is a distinctive and important stage in life.

Research indicates that behavioral development occurs in accordance with the individual's characteristics, that is, with behavior developed prior to his entry into a new environment. The special rate of change in freshman year, which several studies document, suggests that new environments and associates can have a powerful effect in the early stages of socialization.

The existence of different rates and directions of change, as well as of a degree of stability in some

instances, supports a typological approach to human personality. The pros and cons of "type" have been argued back and forth for some time, yet the basic value of type is recognized on all sides. A theory of type, based on accurate observation, gives meaning to the apparent random diversity of human behavior. If misused, the typological approach can be ridiculously irrelevant. If used properly to find meaning in human behavior and to suggest the necessary conditions for behavioral development, a theory of type can be most productive.

Jung's theory of type is discussed because it is the basis for the behavioral development project undertaken in this study. Each person is said to have an habitual attitude toward either the outer world or his own inner world (extraversion or introversion). Similarly, the individual tends to use one of two rational functions, thinking or feeling. These functions determine on what basis the person makes decisions about what he perceives. Such judgments are made on the basis of impersonal analysis and logic (thinking) or personal value (feeling).

With regard to the perception functions, the individual habitually prefers a sensing mode (direct perception by means of the five senses) or an intuitive mode (perception by means of unconscious, associative processes). The combination of attitude and function preferences

creates a limited variety of personality types which describe and predict human behavior.

The necessary conditions for behavioral development are discussed in the literature as well. These basic security and stimulation needs are met by the human group. Recent studies in group development have isolated some of the factors that contribute to the effect of groups on individual behavior.

The degree of homogeneity or heterogeneity among members has varying effects, depending upon the task of the group and the variables used to measure the outcomes of group interaction. Task groups profit from heterogeneity; personal-social groups find security and support in homogeneity. Too much of either sort is deadly or threatening. In some situations, a degree of complementarity assures sufficient security and provides the necessary amount of stimulation to effect change.

The theory of social learning describes the kinds of behavioral development that occur in groups. Individuals imitate the behavior of models, that is, of persons who have developed the desired behavior to a sufficient degree. When the models are peers, their influence is particularly strong. The effects of peer groups, especially in educational settings which support a unique youth culture, have been documented in many research studies. At the same time, a number of studies and projects demonstrate the

effectiveness of the "older young," upperclassmen, for example, in working with incoming freshmen.

In spite of considerable evidence in support of a developmental view of personality and the effectiveness of the group in furthering behavioral development, collegiate institutions have not incorporated strategies for group development into their educational programs. The next chapter describes a setting in which a small-group behavioral development strategy is applied and tested.

CHAPTER III

DESIGN OF THE STUDY

Several aspects of the research project in small-group behavioral development are discussed in this chapter. A description of the freshman class population from which the volunteer sample is drawn and a comparison between volunteers and nonvolunteers are included to provide accurate knowledge concerning the range of external validity of this research. The instrumentation of the small-group project (the Omnibus Personality Inventory [Heist and Younge, 1968] and the Myers-Briggs Type Indicator [Myers, 1962]) is explained and is also used to describe the population and the sample.

This chapter also relates the method of formation and the interaction processes of the small groups, including a description of the role of the group facilitators. A statement of testable hypotheses and description of the research design conclude the presentation.

The Population of the Study

The population from which the research sample is drawn is the freshman class which matriculated in

September, 1969 at Saint Mary's College, Winona, Minnesota. Saint Mary's is a Catholic liberal arts college with a total enrollment of 1,029 undergraduate students. The College had been an all-male institution until the fall term of 1969, when the first resident class of twenty-seven coeds came to the campus. Because of this large proportion of male to female students, much of the descriptive and comparative data refer to male students only.

Saint Mary's is a residential college located in a small Mississippi River town of 25,000 people. All but nine of the 217 freshmen live in college residence halls. All of the nineteen freshman coeds live on campus as well. Course offerings are typical of most liberal arts colleges, with the inclusion of a business administration department. The faculty/student ratio is approximately one to fifteen.

Table 3-1 contains a variety of demographic data on the freshman class, gathered through the College's participation in the American Council on Education's Survey of Entering Freshmen in September, 1969 (Creager et al., 1969). Comparison of the data with ACE national norms for four-year colleges indicates the degree to which this freshman population is typical of those institutions.

Table 3-1.--Summary of Data on Entering Freshmen, American Council on Education, 1969*

Item Description		Saint Mary's College			National Norms for Four-Year Colleges		
		Male	Female	Total	Male	Female	Total
Male/Female ratio		91.7	8.3	100.0	51.6	48.4	100.0
Age, in years							
(3 levels excerpted)	17	2.4	0.0	2.2	4.0	6.0	5.0
	18	79.5	84.2	79.9	75.8	81.9	78.7
	19	15.7	15.8	15.7	15.0	9.6	12.4
Region of home state							
North Central		97.6	100.0	97.8	39.2	36.0	37.6
Hometown							
rural, farmstead		5.2	0.0	4.8	9.7	9.7	9.7
small town		8.1	5.3	7.9	20.4	21.2	20.8
moderate size town or city		21.4	47.4	23.6	32.7	33.7	33.2
suburb of a large city		41.9	21.1	40.2	23.4	21.7	22.6
large city		23.3	26.3	23.6	13.8	13.7	13.7
Citizenship							
native-born		99.5	100.0	99.6	96.8	97.3	97.0
naturalized		0.0	0.0	0.0	1.5	1.6	1.5
not a citizen		0.5	0.0	0.4	1.7	1.1	1.4
Religious background							
Roman Catholic		98.5	100.0	98.7	31.2	31.0	31.1
None		1.0	0.0	0.9	2.7	2.1	2.4
Present religious preference							
Roman Catholic		89.3	89.5	89.3	27.3	28.7	28.0
None		8.7	10.5	8.9	13.6	10.3	12.0

Table 3-1 (Continued)

Item Description	Saint Mary's College			National Norms for Four-Year Colleges		
	Male	Female	Total	Male	Female	Total
Father's occupation						
businessman	46.6	57.9	47.6	30.3	29.6	30.0
doctor (MD, DDS)	2.9	10.5	3.6	2.1	2.3	2.2
educator	3.4	0.0	3.0	3.6	4.1	3.8
engineer	6.3	0.0	5.8	6.9	6.9	6.9
farmer, forester	3.9	0.0	3.6	5.3	5.8	5.5
lawyer	3.4	5.3	3.6	1.2	1.4	1.3
skilled worker	10.7	0.0	9.8	14.2	12.2	13.3
semi-skilled	3.4	0.0	3.1	8.5	7.8	8.2
unskilled	1.9	5.3	2.2	4.0	3.9	4.0
Estimated parental income						
less than $ 4,000	2.4	5.6	2.7	5.2	6.1	5.6
$ 4,000 - $ 5,999	2.4	11.1	3.1	8.3	9.2	8.7
$ 6,000 - $ 7,999	6.3	0.0	5.8	12.4	13.4	12.9
$ 8,000 - $ 9,999	15.6	27.8	16.6	16.9	15.8	16.4
$10,000 - $14,999	29.8	11.1	28.3	30.0	27.7	29.0
$15,000 - $19,999	16.6	16.7	16.6	12.8	12.8	12.8
$20,000 - $24,999	11.2	0.0	10.3	6.1	6.4	6.2
$25,000 - $29,999	4.4	0.0	4.0	2.7	3.2	2.9
$30,000 or more	11.2	27.8	12.6	5.5	5.5	5.5

*(Creager et al., 1969)

The extremely high male-female ratio has already been mentioned. In addition, the majority of students come from a limited geographic area. Of the 96.7% whose home state is in the North Central region, 49% come from Illinois and 31% are from Minnesota. A higher proportion of freshmen come from metropolitan and suburban areas, principally Chicago and Minneapolis-Saint Paul, than is true of the national sample.

The religious background of the vast majority of Saint Mary's freshmen, and the current religious preference of most, is Roman Catholicism. The class is extremely homogeneous, then, with respect to religious background, home state, and urban environment. Enrollment of black students and foreign students is very small, less than one percent and two percent, respectively.

Differences in father's occupation are principally a greater percentage of businessmen and a smaller percentage of skilled, semi-skilled, and unskilled workers among the fathers of Saint Mary's freshmen. This differential frequency is evident in the range of parental income as well.

As shown in Table 3-2, a higher percentage of Saint Mary's fathers achieved a high school diploma or beyond (83.6%, compared with 75.7% of the fathers in the ACE norms group). The differential frequency is mainly caused by a lower percentage of Saint Mary's fathers in the "Some High School" category.

Table 3-2.--Number and Percent* of Fathers Who Completed Various Levels of Education

Level of Education	ACE Norms Group** %	Saint Mary's College Freshmen (M & F) Total Class N=219 % (N)	Nonvol-unteers N=158 % (N)	Volun-teers N=61 % (N)	Research Sample N=36 % (N)
Postgraduate Degree	10.5	12.8 (28)	15.8 (25)	4.9 (3)	5.6 (2)
College Degree	17.6	19.6 (43)	22.2 (35)	13.1 (8)	11.1 (4)
Some College	18.3	20.1 (44)	18.4 (29)	24.6 (15)	36.1 (13)
High School Graduate	29.3	31.1 (68)	29.7 (47)	34.4 (21)	27.8 (10)
Some High School	15.3	8.2 (18)	5.1 (8)	16.4 (10)	13.9 (5)
Eighth Grade or less	9.1	8.2 (18)	8.9 (14)	6.6 (4)	5.6 (2)

*Percents are rounded to one decimal place and do not necessarily total 100.

**National norms, four-year colleges, total group (Creager et al., 1969).

Table 3-3 gives the percentage of mothers who completed various levels of education. Again, the SMC group of mothers who received at least a high school diploma (90.4%) is higher than the 81.6% in the national sample. In both populations, more mothers than fathers had achieved at least a complete high school education.

With the information in Tables 3-2 and 3-3, the first of a number of comparisons can be made among those Saint Mary's freshmen who volunteer to participate in the group project, those who actually participate in the small-group experience, and those who do not volunteer at all. In most cases the volunteer group and the research-sample group, numbering 62 and 36, respectively, are each compared with the nonvolunteers (i.e., with the remainder of the freshman class).

Douglas Heath (1968) reports that groups of participants and nonparticipants do not differ in most traits being measured in his student development study. Rosen (1951) concludes, on the other hand, that "volunteers seem to differ from nonvolunteers in dimensions which can easily limit the validity of generalizations." It seems necessary, therefore, to note the variables which differentiate the volunteer and research-sample groups from the nonvolunteering freshmen.

Table 3-4 gives the chi-square values for the comparisons relative to father's and mother's educational

Table 3-3.--Number and Percent* of Mothers Who Completed Various Levels of Education

Level of Education	ACE Norms Group** %	Saint Mary's College Freshmen (M & F) Total Class N=219 % (N)	Nonvolunteers N=158 % (N)	Volunteers N=61 % (N)	Research Sample N=36 % (N)
Postgraduate degree	3.4	3.2 (7)	4.4 (7)	0.0	0.0
College degree	15.2	10.5 (23)	12.7 (20)	4.9 (3)	5.6 (2)
Some college	19.7	25.1 (55)	27.2 (43)	19.7 (12)	19.4 (7)
High School graduate	43.3	51.6 (113)	48.1 (76)	60.7 (37)	58.3 (21)
Some High School	13.0	5.5 (12)	4.4 (7)	8.2 (5)	11.1 (4)
Eighth Grade or less	5.3	4.1 (9)	3.2 (5)	6.6 (4)	5.6 (2)

*Percents are rounded to one decimal place and do not necessarily total 100.

**National norms, four-year colleges, total group (Creager et al., 1969).

level. The fathers of volunteers tend to have less formal education than those of the nonvolunteer segment of the freshman class. This comparison also holds true when the smaller research sample is compared with the nonvolunteers.

Table 3-4.--Significant Differences among Saint Mary's College Freshmen (Males and Females Combined) in Fathers' and Mothers' Education

	chi-square	p
SMC Nonvolunteer and Volunteer Freshman Groups		
Fathers' education	25.976	.001
Mothers' education	12.665	.05
SMC Nonvolunteer and Research Sample Groups		
Fathers' education	18.010	.01
Mothers' education	7.841	n.s.

The same pattern of lower frequency of higher levels of formal education is true for the volunteers' mothers, in comparison with the mothers of nonvolunteers. The significant difference disappears, however, when the research sample (those volunteers who actually participate in the controlled group experiment) is compared with the nonvolunteer group.

Data in Table 3-5, also drawn from the ACE survey, present the secondary school background of the Saint Mary's freshman class entering in 1969. The reverse

Table 3-5.--Summary of Secondary School Background of Entering Freshmen, American Council on Education, 1969* (in percentages)

Item Description	Saint Mary's College			National Norms for Four-Year Colleges		
	Male	Female	Total	Male	Female	Total
Type of school						
public	18.0	21.1	18.3	81.2	81.6	81.4
private denominational	74.3	78.9	74.8	14.4	14.7	14.6
Average grade						
A or A+	1.9	5.3	2.2	4.0	6.7	5.3
A-	2.9	10.5	3.5	8.5	13.0	10.7
B+	12.0	26.3	13.2	16.9	24.3	20.4
B	14.4	15.8	14.5	24.4	29.3	26.8
B-	22.5	31.6	23.2	17.1	13.4	15.3
C+	24.4	5.3	22.8	16.3	8.8	12.7
C	20.1	5.3	18.9	12.2	4.4	8.4
D	1.9	0.0	1.8	0.7	0.1	0.4
Rank in class						
top 1 per cent	2.4	0.0	2.2	3.9	7.3	5.6
top 10 per cent	11.1	15.8	11.5	21.4	29.0	25.1
top quarter	15.0	36.8	16.8	29.5	31.7	30.6
second quarter	33.3	36.8	33.6	27.1	22.1	24.7
third quarter	32.9	5.3	30.5	14.9	8.4	11.7
fourth quarter	5.3	5.3	5.3	3.2	1.4	2.4
Achievements						
elected pres. of organization	22.4	26.3	22.7	24.1	22.1	23.2
high rating state music contest	7.1	5.3	7.0	9.3	12.9	11.0
state/regional speech contest	4.3	5.3	4.4	6.0	7.3	6.7
major part, play	19.5	21.1	19.7	17.9	18.0	18.0
varsity sports	41.9	15.8	39.7	49.6	13.8	32.3
art award	3.8	5.3	3.9	4.6	6.6	5.6
school paper ed.	13.3	26.3	14.4	9.6	17.1	13.2
original writing published	15.2	42.1	17.5	15.7	21.8	18.6
NSF summer crs.	0.5	5.3	0.9	1.0	0.6	0.8
state/regional science contest	2.9	5.3	3.1	2.5	2.1	2.3
scholastic honor society	17.1	31.6	18.3	25.3	39.0	31.9
National Merit recognition	5.7	10.5	6.1	8.6	9.1	8.8

*(Creager et al., 1969)

pattern of private and public high school background is immediately recognizable: SMC freshmen are predominantly graduates of private (in most cases, Catholic) secondary schools. With respect to average grade in high school, 56.6% of the SMC freshmen have a B- average or better, whereas the figure for the ACE sample is 78.5%. The pioneer SMC coeds, however, have 89.5% of their number in the same B- or above category, while the girls in the ACE sample register a percentage of 86.7. Similar differences in rank in class can also be observed.

The category of achievements in high school indicates generally the same proportion of participation in various activities among both the SMC and ACE populations. The largest difference in favor of the SMC freshman class is in varsity sports; the largest difference in favor of the ACE sample is in scholastic honor society membership.

In both the SMC and ACE populations, the objective checked by most entering freshmen is "to develop a philosophy of life" (Table 3-6). Saint Mary's freshmen (both male and female) indicate that having friends different from themselves is the second most important objective. "Raising a family" is the second ranking objective of the ACE freshmen. The same six objectives receive placement in the top order of importance by more than 50% of both populations, male and female. Business

Table 3-6.--Rank Order of Objectives Considered Essential or Very Important by Entering College Freshmen*

Item Descriptions Checked	Saint Mary's College			National Norms for Four-Year Colleges		
	M	F	Total	M	F	Total
(by 50% or more respondents:)						
Develop a philosophy of life	1	1	1	1	1	1
Have friends different from me	2	2.5	2	4	4	4
Help others in difficulty	3	2.5	3	5	3	3
Be an authority in my field	4		6	3	6	5
Raise a family	5	5	5	2	2	2
Keep up with political affairs	6	4	4	7	7	7
Have an active social life	7	6	7	6	5	6
Succeed in my own business	8			8		
Be very well-off financially				9		
(by 25% to 49% of respondents:)						
Be an authority in my field		7				
Succeed in my own business		10.5	8		10	8
Obtain recognition from peers	9	10.5	10	10	9	9.5
Influence social values	10	8	9	11	8	11
Be very well-off financially	11	10.5	11		11	9.5
Be administratively responsible	12		12	12		
Influence political structure	13	10.5	13			

*(Creager et al., 1969)

and financial objectives rank in the lower half (below number 7) in every case.

A comparison between volunteer and nonvolunteer male freshmen on American College Test (ACT) scores indicates no significant differences between volunteers and nonvolunteers, nor between the research sample and nonvolunteers. Table 3-7 lists the means and standard deviations of ACT scores of male and female freshmen in the various categories (total class, nonvolunteers, and volunteers). Because the research sample, numbering 36 students, has only 2 female freshmen in it, this grouping is not divided into separate categories of male and female in any of the comparisons and descriptions reported.

The same result occurs when comparisons are made on the basis of first-semester college grade-point average (Table 3-8). No significant differences occur between nonvolunteer and volunteer males, nor between male nonvolunteers and the research sample. On both measures, ACT and GPA, female freshmen tend to perform better than their male counterparts, however.

The freshman population at Saint Mary's College is a relatively homogeneous one, with respect to its private, Catholic secondary school background, regional geographical origin, and urban background. The small, residential college environment in which this class now lives may appears, at first, to be an ineffective setting,

Table 3-7.--Means and Standard Deviations of American College Test Scores of Saint Mary's College Freshmen

		English	Math	Social Science	Natural Science	Composite
Total Class						
Males	M	19.0	21.8	22.7	21.9	21.5
N=204	SD	4.1	6.3	5.1	5.8	4.3
Females	M	22.3	21.7	23.1	23.2	22.7
N=19	SD	2.2	5.1	5.5	4.9	3.6
Non-volunteers						
Males	M	18.8	22.0	22.3	21.7	21.3
N=152	SD	4.1	5.9	5.0	5.5	4.0
Females	M	22.5	21.9	23.6	23.6	23.0
N=14	SD	2.4	5.1	5.1	5.2	3.7
Volunteers						
Males	M	19.7	21.3	23.8	22.4	21.9
N=52	SD	4.0	7.5	5.1	6.8	5.0
Females	M	21.6	21.4	21.4	21.8	21.8
N=5	SD	1.1	5.4	7.0	4.1	3.4
Research Sample	M	20.0	21.4	23.6	22.6	22.1
N=36	SD	4.1	7.2	5.5	6.3	4.8
t Values						
Non-volunteer and Volunteer Males		1.392	0.611	1.840	0.671	0.784
Non-volunteer Males and Research Sample		1.579	0.464	1.297	0.789	0.927

Note: None of the t values is significant at the .05 level.

Table 3-8.--Means and Standard Deviations of First-Semester College Grade-Point Averages of Saint Mary's College Freshmen

		N	M	SD	t	p
Total Class	Males	215	2.22	0.84		
	Females	19	2.38	0.72		
Nonvolunteers	Males	158	2.21	0.87		
	Females	14	2.44	0.73		
Volunteers	Males	57	2.23	0.76		
	Females	5	2.22	0.74		
Research Sample		36	2.28	0.83		
Comparison between Male Nonvolunteers and Volunteers					0.164	n.s.
Comparison between Male Nonvolunteers and Research Sample					0.476	n.s.

judging from the homogeneity that exists. However, small four-year colleges hold more promise in the area of innovation than larger institutions (Hefferlin, 1969). Moreover, one of the conclusions reached in Feldman and Newcomb's review of research on college student development supports the role of the small, homogeneous, four-year institution:

> The conditions for campus-wide impacts appear to have been most frequently provided in small, residential, four-year colleges. These conditions probably include relative homogeneity of both faculty and student body together with opportunity for continuing interaction, not exclusively formal, among students and between students and faculty (Feldman and Newcomb, 1969, 331).

Additional descriptive and comparative data for the freshman class are provided by the two psychological instruments used in this study, the Omnibus Personality Inventory (Form F) and the Myers-Briggs Type Indicator. Even though these inventories are discussed later in the chapter, the class data derived from them will be presented here in order to complete the description of the freshman population and the comparison of volunteers and nonvolunteers.

Because the OPI was completed by the entire freshman class prior to the announcement of the small-group project, results on the Inventory are available to describe the SMC freshman population. Table 3-9 lists the raw scores of the Saint Mary's groups, together with those of the OPI Normative sample. Figure 3-1 is a composite profile for SMC male freshmen and male freshmen in the OPI normative sample. Critical t ratios indicate in which variables the SMC males differ significantly from the national sample of male students.

The Saint Mary's freshmen indicate less liking for reflective thought and academic activities (TI) and for theoretical concerns and scientific thinking (TO). Surprisingly, the SMC freshman males are more liberal in religious orientation (RO) than the national norms group. They also indicate greater readiness to express impulses (IE) and to value practical, applied activities and

Table 3-9.--Means and Standard Deviations of Omnibus Personality Inventory (Form F) Raw Scores

OPI Scale	OPI Normative Sample*				Saint Mary's College Freshmen							
	Male		Female		Total Male		Total Female		Nonvolunteer Male		Volunteer Male	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Thinking Introversion	24.5	8.0	26.0	7.8	20.7	7.2	23.4	7.9	20.0	6.8	22.7	8.0
Theoretical Orientation	21.1	5.5	18.2	5.5	17.8	5.3	16.5	4.8	17.8	5.2	17.6	5.8
Estheticism	10.6	5.2	13.7	4.8	10.4	4.6	14.2	3.4	10.0	4.5	11.4	4.9
Complexity	15.6	5.3	15.0	5.6	15.7	4.9	16.8	6.7	15.2	4.5	17.1	5.9
Autonomy	24.0	8.3	22.9	8.4	23.7	6.5	24.3	9.2	22.9	6.2	25.9	6.8
Religious Orientation	12.6	6.2	11.1	6.0	13.7	4.6	14.1	5.0	13.4	4.7	14.4	4.0
Social Extroversion	22.6	7.3	24.1	6.8	22.8	7.4	21.8	6.5	22.5	7.5	23.6	7.3
Impulse Expression	30.7	9.8	25.7	9.6	33.4	8.4	28.6	12.1	33.2	8.2	33.7	8.7
Personal Integration	30.3	10.4	29.4	10.3	29.0	10.5	31.0	10.0	29.2	10.6	28.6	10.4
Anxiety Level	12.5	4.6	12.0	4.6	10.8	4.7	10.0	4.9	11.1	4.7	10.2	4.5
Altruism	19.2	5.6	22.4	5.2	18.7	5.6	22.9	4.6	18.1	5.5	20.1	5.7
Practical Outlook	15.1	6.4	14.6	6.4	16.0	5.2	14.7	6.0	16.7	4.8	14.0	5.8
Masculinity-Femininity	33.1	5.7	23.9	5.4	30.3	5.6	22.7	5.5	30.9	5.1	28.6	6.3
Response Bias	13.7	4.5	13.0	4.3	11.6	4.3	10.6	2.9	11.8	4.5	11.1	3.5
N	3540		3743		171		10		124		47	

*(Heist and Yonge, 1968, 50) Reproduced by permission.

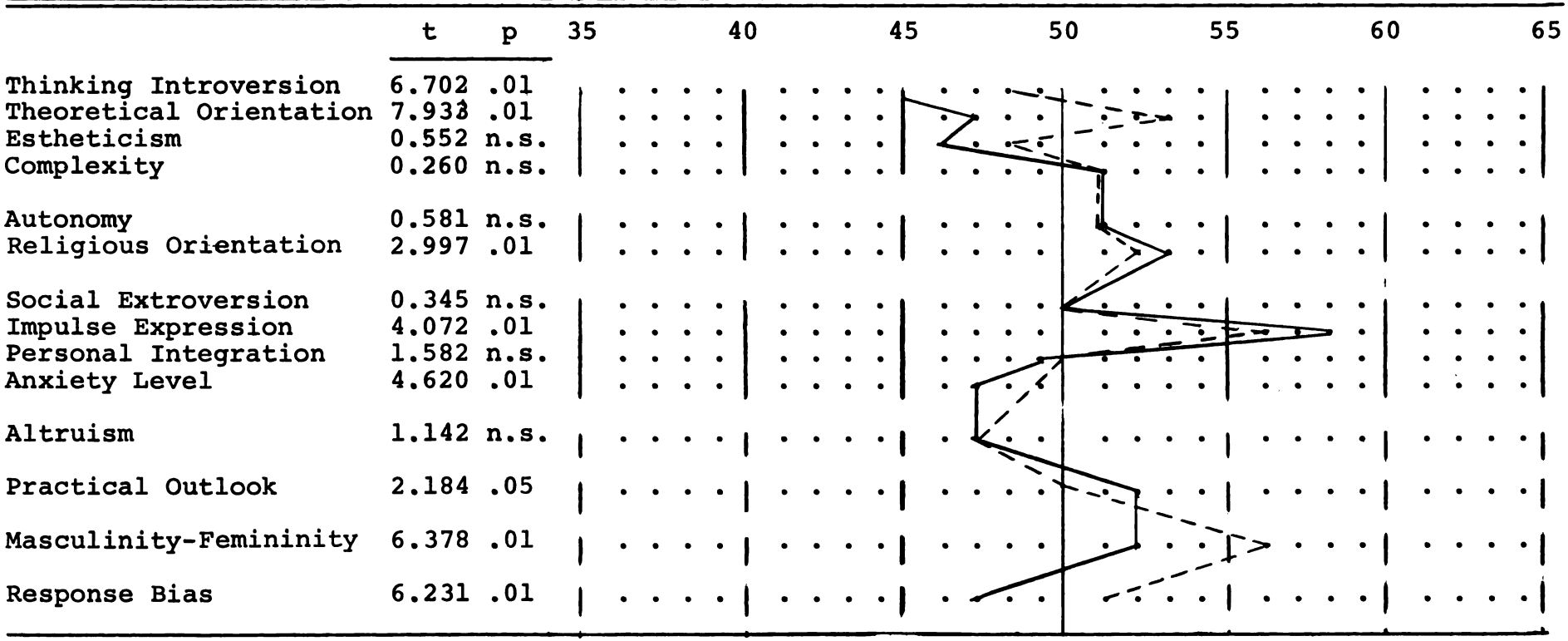

Figure 3-1.--Composite Profile of Omnibus Personality Inventory Mean Standard Scores of Saint Mary's College Male Freshmen and OPI Normative Sample Male Freshmen

Note: Standard scores are based on OPI norms, on which the mean is 50 and the standard deviation is 10. Solid line denotes mean standard scores of 171 SMC freshman males; broken line denotes mean standard scores of OPI normative sample of 3540 freshman males. Values for t are computed from raw scores.

material things (PO). They describe themselves as more tense (AL) and as having less predominantly masculine interests (MF). Their responses on the RB scale indicate greater realism of self-concept, less of a tendency to make a good impression.

Because the OPI was administered to the Saint Mary's freshmen in December, after more than three months' experience in the college environment, the differences may be accounted for by early socialization into the collegiate culture, rather than attributed strictly to input characteristics of the class.

With respect to the eight variables which Trent (1967) reports for his sample of five West Coast Catholic colleges (TI, TO, Es, Co, Au, RO, IE, and AL), SMC male freshmen mean scores are higher in every instance. The Thinking Introversion scale is the only one which shows a lower mean for SMC freshman males than for all of the colleges in McConnell's longitudinal study of college student development (McConnell et al., forthcoming; data reported in Feldman and Newcomb, 1969). In the other scales of McConnell's study, the SMC male freshman means fall within the range of the various college means.

Table 3-10 reports the intercorrelations among OPI scales for the SMC freshman males and the OPI normative-sample males. The patterns of correlation for Personal Integration, Anxiety Level, Masculinity-Femininity

Table 3-10.--Intercorrelations among Omnibus Personality Inventory Scales, SMC Freshman Males and OPI Normative Sample Males*

OPI	TI	TO	Es	Co	Au	RO	SE	IE	PI	AL	Am	PO	MF	RB	Saint Mary's Mean	Saint Mary's SD
TI		.50	.66	.45	.25	-.02	.40	.12	.23	.19	.57	-.60	-.39	.40	20.7	7.2
TO	.62		.42	.49	.23	.19	.26	.14	.13	.14	.26	-.37	.00	.51	17.8	5.3
Es	.65	.32		.40	.17	.05	.25	.21	-.05	-.02	.33	-.39	-.59	.21	10.4	4.6
Co	.57	.49	.50		.37	.20	.24	.37	.02	-.02	.30	-.61	-.22	.08	15.7	4.9
Au	.50	.43	.29	.58		.44	-.03	.16	.16	.16	.13	-.65	-.04	-.07	23.7	6.5
RO	.27	.35	.20	.40	.62		-.07	.30	-.09	-.08	-.29	-.20	.09	-.12	13.7	4.6
SE	.10	.02	.03	-.02	-.11	-.19		.29	.48	.38	.62	-.18	-.18	.43	22.8	7.4
IE**	.04	.00	.27	.38	.21	.28	.08		-.27	-.17	-.11	-.07	-.14	-.24	33.4	8.4
PI	.10	.14	-.19	-.13	.10	-.08	.42	-.49		.79	.54	-.26	.27	.62	29.0	10.5
AL	.09	.22	-.13	.01	.11	.01	.31	-.31	.69		.36	-.21	.36	.57	10.8	4.7
Am	.47	.29	.26	.20	.18	-.12	.45	-.30	.50	.36		-.43	-.30	.49	18.7	5.6
PO	-.65	-.50	-.33	-.62	-.74	-.40	-.01	.02	-.19	-.08	-.33		.24	-.18	16.0	5.2
MF	-.35	.10	-.59	-.22	-.11	.02	-.14	-.13	.26	.41	-.19	.25		.16	30.3	5.6
RB	.39	.53	.13	.06	.06	-.07	.26	-.44	.60	.57	.46	-.07	.19		11.6	4.3
OPI Norms																
Mean	24.5	21.1	10.6	15.6	24.0	12.6	22.6	30.7	30.3	12.5	19.2	15.1	33.1	13.7		
SD	8.0	5.5	5.2	5.3	8.3	6.2	7.3	9.8	10.4	4.6	5.6	6.4	5.7	4.5		

*(Heist and Yonge, 1968, 50) Reproduced by permission. Copyright © 1962, 1968 by The Psychological Corporation, New York, N.Y. All rights reserved. (Correlations above diagonal are for 171 SMC freshman males; correlations below diagonal are for OPI normative sample of 3540 college males.)

**OPI normative sample correlations for IE and other variables are based on an earlier scale which contained five more items than the present IE scale in Form F.

and Response Bias are closely akin in both samples. In the two most divergent cases (SE and RO), scores of Saint Mary's freshman males show a higher correlation between Social Extroversion and the intellectual variables measured by the OPI and a lower correlation between Religious Orientation and the same intellectual variables, as well as Autonomy.

A comparison between SMC male volunteers and nonvolunteers, based on OPI data in Table 3-9, is given in the composite profile of Figure 3-2. Volunteers have a higher interest in a broad range of intellectual activities (TI) and give greater evidence of an experimental and flexible orientation (Co). They are more autonomous and liberal (Au), have stronger concerns for the feelings and needs of others (Am), are less utilitarian and materialistic (PO), and express stronger social inclinations and sensitivity (MF).

Although volunteers differ from nonvolunteers in two of the intellectual disposition scales (TI and Co), a comparison of the groups on the Intellectual Disposition Category (IDC) continuum indicates no significant differences. The categorization makes use of six OPI scales--the four intellectual variables, Thinking Introversion, Theoretical Orientation, Estheticism, and Complexity; and the two related scales of Autonomy and Religious Orientation. Persons are placed in one of

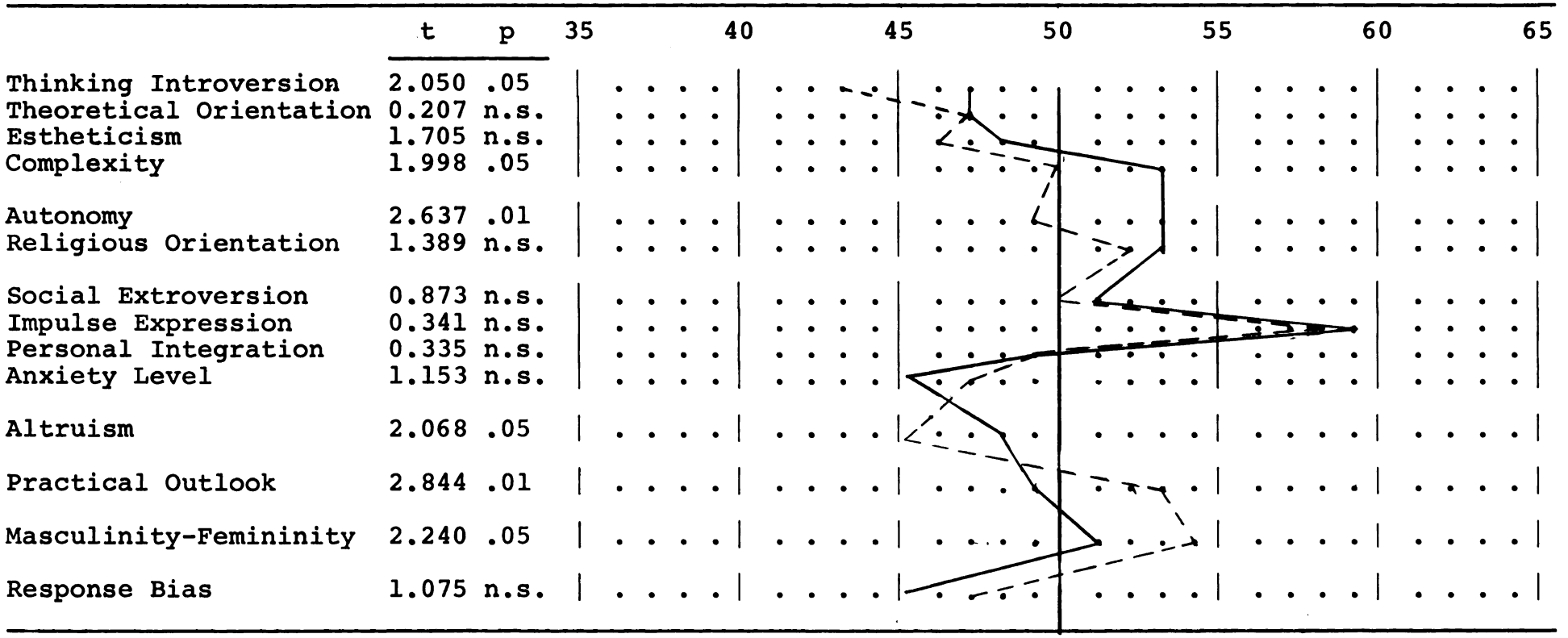

Figure 3-2.--Composite Profile of OPI Mean Standard Scores of SMC Male Freshman Volunteers and Nonvolunteers.

Note: Standard scores are based on OPI norms, on which the mean is 50 and the standard deviation is 10. Solid line denotes mean standard scores of 47 male volunteers; broken line denotes mean standard scores of 124 male nonvolunteers. Values for t are computed from raw scores.

eight categories according to a multifaceted system which weights their performance on the six OPI scales. The category of 1 represents the highest level of the intellectual syndrome.

Treating the eight Intellectual Disposition Categories as unit scores, Table 3-11 compares the means of the Saint Mary's freshman sample with the OPI normative sample of male and female freshmen. The Saint Mary's freshmen have a lower mean ranking on the IDC, but there are no significant differences between volunteers and nonvolunteers on this typological measure. The 36 freshmen in the research sample have identical means for pre-test and post-test administrations of the OPI, in spite of the three-months' interval. This corroborates the view that the intellectual scales of the OPI reflect characteristics that are relatively stable by the time of entrance into college (Heist and Yonge, 1968, 2).

The frequency distributions among the eight Intellectual Disposition Categories for the OPI Normative Sample and Saint Mary's College freshman sample are given in Table 3-12. Chi-square values indicate no significant differences between SMC freshmen and the OPI normative sample, nor among the Saint Mary's volunteers and nonvolunteers.

Further data from the use of the OPI as the dependent variable in the study of effects of group

Table 3-11.--Means and Standard Deviations of Intellectual Disposition Category (IDC) of OPI Normative Sample and Saint Mary's College Freshmen (Males and Females Combined)

	N	M	SD	t	p
OPI Normative Sample	1287	5.2	1.6		
SMC Freshmen	181	5.5	1.3		
Comparison				2.819	.01
SMC Non-volunteers	132	5.6	1.2		
SMC Volunteers	49	5.3	1.5		
Comparison				1.258	n.s.
SMC Non-volunteers	132	5.6	1.2		
SMC Research Sample (Pre-test)	36	5.4	1.6		
Comparison				0.698	n.s.
SMC Research Sample (Post-test)	36	5.4	1.9		

Table 3-12.--Percent* of Saint Mary's College and OPI Normative Sample Freshmen (Male and Female) in Each Intellectual Disposition Category of the Omnibus Personality Inventory

IDC	OPI Norms	Total Class	Nonvolunteers	Volunteers	Research Sample
1	1.5%	0.0%	0.0%	0.0%	0.0%
2	5.1	1.7	0.8	4.1	5.6
3	9.6	3.9	3.0	6.1	5.6
4	13.8	16.0	14.4	20.4	19.4
5	21.2	25.4	25.8	24.5	19.4
6	33.0	33.7	38.6	20.4	25.0
7	9.7	12.7	11.4	16.3	13.9
8	6.2	6.6	6.1	8.2	11.1
N	1287	181	132	49	36

*Percents are rounded to one decimal place and do not necessarily total 100. Chi-square values between total class and OPI normative sample (11.41), between nonvolunteers and volunteers (10.63), and between nonvolunteers and research sample (6.74) are not statistically significant at the .05 level.

interaction are presented in Chapter IV. The second self-report inventory used in the study, the Myers-Briggs Type Indicator (MBTI), provides the final portion of descriptive and comparative data on the Saint Mary's freshman class.

Frequency distributions of the sixteen possible Indicator types are available for a number of student populations. The percentages of SMC freshmen and of volunteers occurring within each type are listed in Table 3-13. The types are not equally represented in the freshman class, nor do persons of each type volunteer in similar proportion. The frequency range for the freshman class is 1.3% (for INFJ's and INTJ's) to 14.2% (for ENFP's). Five types (ISFJ, INFP, ESFP, ENFP, and ESFJ) account for 54% of the total class.

The rate of volunteering from students within each type also varies widely, from 0% to 100%! The INFP and ENFP types together account for 34% of the volunteers in this study. These same two types comprise 42% of the volunteers in a small-group research project at Michigan State University (McCary, 1970). Although they are among the types with the largest number of freshmen in the class, INFP's and ENFP's volunteer to an extent out of proportion to their frequency in the freshman population.

In Table 3-14 the type distribution of the Saint Mary's freshman class (males only) is compared with four

Table 3-13.--Frequency of Occurrence (in Percentages) of the Sixteen Myers-Briggs Personality Indices in the Total Freshman Class and in the Total Volunteer Group (Males and Females Combined)

PC: percentage of 232 Saint Mary's College freshmen
PV: percentage of 62 freshman volunteers
PT: percentage of each type who volunteer for project

	ISTJ	ISFJ	INFJ	INTJ
PC	6.9	9.9	1.3	1.3
PV	6.5	3.2	4.8	1.6
PT	25.0	8.7	100.0	33.3
	ISTP	**ISFP**	**INFP**	**INTP**
PC	1.7	5.2	9.9	3.9
PV	0.0	1.6	11.3	3.2
PT	0.0	8.3	30.4	22.2
	ESTP	**ESFP**	**ENFP**	**ENTP**
PC	4.7	9.1	14.2	5.6
PV	3.2	12.9	22.6	6.5
PT	18.2	38.1	42.4	30.8
	ESTJ	**ESFJ**	**ENFJ**	**ENTJ**
PC	7.3	10.8	5.6	2.6
PV	9.7	8.1	4.8	0.0
PT	35.3	20.0	23.1	0.0

Note: The dominant type is indicated in each case by the underlined letter, e.g., ISTJ.

Table 3-14.--Frequency of Occurrence (in Percentages) of the Sixteen Myers-Briggs Indices in Various Samples of Male Students*

BC: percentage of 488 students in business college
EN: percentage of 2188 engineering students
HS: percentage of 3503 high-school students (college-prep)
LA: percentage of 3676 liberal arts college freshmen
SM: percentage of 213 Saint Mary's College freshmen

	ISTJ	ISFJ	INFJ	INTJ
BC	9.0	3.9	0.2	2.7
EN	10.2	4.2	5.3	13.8
HS	8.1	4.0	2.1	4.7
LA	7.3	4.2	5.0	7.3
SM	7.0	9.9	1.4	1.4
	ISTP	**ISFP**	**INFP**	**INTP**
BC	7.2	1.4	2.2	3.1
EN	2.2	1.9	5.0	8.7
HS	5.1	4.4	4.2	6.0
LA	3.3	2.8	8.0	7.8
SM	1.4	5.6	10.3	4.2
	ESTP	**ESFP**	**ENFP**	**ENTP**
BC	12.9	7.0	6.2	7.2
EN	3.1	1.3	5.7	7.3
HS	7.8	6.4	7.1	7.9
LA	3.8	4.3	9.6	8.1
SM	5.2	9.4	11.7	5.2
	ESTJ	**ESFJ**	**ENFJ**	**ENTJ**
BC	21.7	8.8	1.6	4.9
EN	9.0	3.3	6.1	13.0
HS	15.7	6.5	3.5	6.7
LA	9.3	5.9	5.8	7.5
SM	7.0	11.3	6.1	2.8

*(Myers, 1962, D-5) Note: The dominant type is indicated in each case by the underlined letter, e.g., ISTJ.

other populations from the MBTI normative study. The frequency distributions are unique to each sample and significantly different, as the chi-square values of Table 3-15 indicate. The apparently erratic variation among the sixteen indices can be understood in part by noting those types in which the SMC group is similar to business college students or to liberal arts students, and those types in which the SMC frequency is highly unique.

Of the four Jungian functions (sensing, intuition, thinking, and feeling) one is more developed in each person, and hence more influential, than the others (Myers, 1962). This dominant function gives its name to the dominant type. The dominant or leading function is complemented by an auxiliary function. If the dominant function is one of the perception pair (sensing or intuition), the auxiliary function is the stronger of the two judging functions (thinking or feeling), and vice versa. The dominant type is also determined by the individual's attitudinal preference for extraversion or introversion and judgment or perception.

When the sixteen preference indices are combined into four dominant types, the comparisons among population samples become more vivid. According to Table 3-16, the SMC male student sample has approximately the same proportion of sensers as the business college group, the

Table 3-15.--Chi-square Test of Difference in Distribution of Myers-Briggs Indices among SMC Male Freshmen, Male Liberal Arts Students, and Male High School (College-Prep) Students

Myers-Briggs Type		Observed frequency, male Saint Mary's freshmen*	Expected frequency, male liberal arts students**	Expected frequency, male high school students***
(1)	ISTJ	15	16	17
(2)	ISFJ	21	9	9
(3)	INFJ	3	11	5
(4)	INTJ	3	16	10
(5)	ISTP	3	7	11
(6)	ISFP	12	6	9
(7)	INFP	22	17	9
(8)	INTP	9	17	13
(9)	ESTP	11	8	16
(10)	ESFP	20	9	14
(11)	ENFP	25	20	15
(12)	ENTP	11	17	17
(13)	ESTJ	15	20	33
(14)	ESFJ	24	12	14
(15)	ENFJ	13	12	7
(16)	ENTJ	6	16	14
	chi-square value		83.485	88.356
	significance level		.001	.001

*N=213

**Based on percentage frequencies for 3676 male liberal arts college students (Myers, 1962, appendix D-5).

***Based on percentage frequencies for 3503 male Pennsylvania high school students in college preparatory programs (Myers, 1962, appendix D-5).

Table 3-16.--Frequency of Occurrence (in Percentages) of the Four Myers-Briggs Type Indicator Dominant Personality Types in Various Samples of Male Students*

BC: Percentage of 488 students in business college
EN: Percentage of 2188 engineering students
HS: Percentage of 3503 college-preparatory secondary students
JM: Percentage of 69 Justin Morrill College (MSU) freshmen**
LA: Percentage of 3676 liberal arts college freshmen
SM: Percentage of 213 Saint Mary's College freshmen

Dominant Type	BC	EN	HS	JM	LA	SM***
Sensing	32.8	18.8	26.3	3.0	19.6	31.5
Intuition	16.3	32.1	21.8	49.0	30.0	19.7
Thinking	36.9	32.9	33.5	16.0	27.9	15.5
Feeling	14.0	16.3	18.6	32.0	22.5	33.3

*(Myers, 1962, D-5). Percentages are rounded and do not necessarily total 100.

**(Jenks and Shaw, 1970).

***The SM frequency differs significantly from each of the other groups at the .001 level.

same frequency of intuitives as the high school sample, and the same ratio of thinkers and feelers as the Justin Morrill College (MSU) sample. Two-thirds of Saint Mary's freshman males are sensers or feelers, a dual combination that occurs in none of the other comparison samples.

Because of the different rates of volunteering, the final research sample in the small-group project does not accurately reflect the proportion of the four dominant types in the total class. More sensers and fewer feelers are included in the research sample than their ratio in the total class might suggest (Table 3-17). The reason for the difference in frequency of dominant types between the volunteer group and the research sample is explained in a later section. (The research sample includes only those volunteers who actually participate in the pre-test and post-test phases of the group project.)

These frequency ratios indicate differential rates of volunteering among the dominant types. Persons who prefer one or the other of each attitude and function (extraversion-introversion, sensing-intuition, thinking-feeling, and judgment-perception) volunteer in different degrees as well. The volunteer rate for male and female freshmen combined is given in Table 3-18 for each of these various MBTI categories. Dominant intuitives in McCary's group project at Michigan State University also have the highest volunteer rate, 38.2% in that study (McCary, 1970).

Table 3-17.--Frequency of MBTI Dominant Types among Saint Mary's College Freshmen

	Sensing		Intuition		Thinking		Feeling	
	N	%	N	%	N	%	N	%
Total Class	71	30.6	52	22.4	36	15.5	73	31.5
Males	67	31.5	42	19.7	33	15.5	71	33.3
Females	4	21.1	10	52.6	3	15.8	2	10.5
Nonvolunteer								
Males	53	34.0	23	14.7	25	16.0	55	35.3
Females	2	14.3	7	50.0	3	21.4	2	14.3
Volunteer								
Males	14	24.6	19	33.3	8	14.0	16	28.1
Females	2	40.0	3	60.0	0		0	
Research Sample	14	38.9	8	22.2	6	16.7	8	22.2

Note: Percentages are rounded to one decimal place and do not necessarily total 100.

Table 3-18.--Differential Rates of Volunteering, According to MBTI Dominant Types and Preference Scores (Males and Females Combined)

Percentage in each category who volunteer			
Dominant Types:			
Sensing	Intuition	Thinking	Feeling
22.5	42.3	22.2	21.9
Preference Scores:			
Extraversion	Introversion	Sensing	Intuition
30.2	21.5	21.7	33.0
Thinking	Feeling	Judgment	Perception
24.0	28.1	22.6	30.2

Note: Percentages are rounded to one decimal place and do not necessarily total 100.

The other three dominant types all volunteer at a relatively similar rate in the present sample, whereas in the MSU study, feelers (32.0%) and thinkers (20.2%) far outnumber sensers (9.6%).

The frequency with which each MBTI preference occurs in the norms group and in the various segments of the SMC freshman class is reported in Table 3-19. These preferences divide the respondents into two categories within each pair of variables and are not to be confused with the dominant types, which are formed on the basis of particular combinations of all four sets of preferences. Certain aspects of the student samples stand out in greater contrast in this table: the contrast between the small pioneer group of coeds and the male freshmen with respect to extraversion and intuition, the low proportion of male students who prefer thinking over feeling, and the contrast between nonvolunteers and volunteers in sensing and intuition preferences.

Saint Mary's freshman males are significantly different from the MBTI normative sample in their greater preference for sensing and feeling (Table 3-20). Volunteers differ from nonvolunteers in having greater preference for extraversion and intuition. The research sample differs from nonvolunteers, however, in a greater preference for extraversion and perception. The research sample does not differ significantly from the nonvolunteer

Table 3-19.--Frequency of Myers-Briggs Type Indicator Preference Scores of SMC Freshmen and MBTI Normative Sample

	N	Percent having preference for			
		Extraversion	Introversion	Sensing	Intuition
Total					
Males	213	59%	41%	57%	43%
Females	19	74	26	42	58
Nonvolunteer					
Males	156	56	44	61	39
Females	14	71	29	43	57
Volunteer					
Males	57	67	33	46	54
Females	5	80	20	40	60
Research Sample**	36	67	33	61	39
MBTI Norms					
Males	2177	54	46	38	62
Females	241	58	42	30	70
		Thinking	Feeling	Judgment	Perception
Total					
Males	213	34%	66%	47%	53%
Females	19	32	68	32	68
Nonvolunteer					
Males	156	36	64	49	51
Females	14	29	71	36	64
Volunteer					
Males	57	30	70	40	60
Females	5	40	60	20	80
Research Sample**	36	33	67	39	61
MBTI Norms					
Males	2177	54	46	53	47
Females	241	34	66	45	55

*MBTI Normative Sample consists of males and females in liberal arts colleges (Myers, 1962, 14-15).

**Both treatment and control groups in the research sample have the same percent frequencies because of their matching on the basis of the Myers-Briggs typology.

sample in preferences for each of the four functions (sensing, intuition, thinking, and feeling).

Table 3-20.--Significant Differences in Frequency of Myers-Briggs Type Indicator Preferences in SMC and MBTI Normative Samples (Males Only)

	SMC Freshmen and MBTI Normative Sample		SMC Nonvolunteers and Volunteers		SMC Nonvolunteers and Research Sample	
	chi-sq.	p	chi-sq.	p	chi-sq.	p
Extraversion or Introversion	1.006	n.s.	4.910	.05	4.911	.05
Sensing or Intuition	9.550	.005	9.458	.005	0.0	n.s.
Thinking or Feeling	16.103	.001	1.562	n.s.	0.391	n.s.
Judgment or Perception	1.445	n.s.	3.241	n.s.	4.002	.05

Continuous scores, formed by adding the preference score to or subtracting it from 100, are used to compute correlations between the MBTI and other variables of interest. In the four continuous scores (E-I, S-N, T-F, J-P), the positive pole is customarily at the I, N, F, and P end of the scale.

Intercorrelations of MBTI continuous scores of the SMC freshmen are higher than those reported by Myers (1962). Three of the scores (E-I excepted) are significantly interrelated in the male freshman population

(Table 3-21). The small number of females restricts the significance of their extremely high correlation of S-N with J-P. Frequent significant correlations are reported between S-N and J-P (Myers, 1962; Stricker and Ross, 1962), but more rarely between T-F and S-N, or T-F and J-P. The range of intercorrelations reported in the Myers-Briggs Manual (Myers, 1962) is given in Table 3-22.

The typological theory suggests that different dominant types display different patterns of behavior. The composition of groups in the small-group research project according to the four dominant types of the MBTI assumes that these different patterns do, in fact, exist. Differences among dominant types in American College Test composite score and first-semester college grade-point average, however, do not appear to be large (Table 3-23).

When freshmen are divided according to their preference in each of the four pairs of MBTI variables, greater differences in mean ACT and GPA performance emerge (Table 3-24). Each preference category (E or I, etc.) includes the entire male freshman population, whereas the dominant-type categories are mutually exclusive, each student appearing in only one dominant classification. Because the dominant-type designation is used in forming the groups in this research project, more attention will be given to dominant type than to preference.

Table 3-21.--Intercorrelations of Myers-Briggs Type Indicator Continuous Scores* of Saint Mary's College Freshmen

	Males (N=213)			Females (N=19)		
	S-N	T-F	J-P	S-N	T-F	J-P
E-I	-0.09	-0.02	-0.03	-0.15	0.11	-0.14
S-N		0.20**	0.46***		0.35	0.81***
T-F			0.31***			0.30

*Extraversion-Introversion (E-I), Sensing-Intuition (S-N), Thinking-Feeling (T-F), Judgment-Perception (J-P)

**Significant at the 0.005 level.

***Significant at the 0.0005 level.

Table 3-22.--Range of Intercorrelations of MBTI Continuous Scores* of Several Samples**

	S-N	T-F	J-P
Males			
E-I	-0.10 to 0.06	-0.07 to 0.03	0.05 to 0.09
S-N		0.02 to 0.06	0.26 to 0.33
T-F			0.10 to 0.18
Females			
E-I	-0.14 to 0.06	-0.19 to 0.04	-0.05 to 0.04
S-N		0.05 to 0.10	0.33 to 0.47
T-F			-0.02 to 0.20

*Extraversion-Introversion (E-I), Sensing-Intuition (S-N), Thinking-Feeling (T-F), Judgment-Perception (J-P).

**(Myers, 1962, 11)

Table 3-23.--Extent to Which SMC Male Freshmen of Each MBTI Dominant Type Deviate from Overall Male Freshman Mean ACT Composite Score and First-Semester GPA

	Dominant Sensers	Dominant Intuitives	Dominant Thinkers	Dominant Feelers
ACT Composite				
M	21.1	22.0	21.6	21.6
N	65	38	30	63
Deviation from Overall Mean	-0.4	0.5	0.1	0.1
First-Semester GPA				
M	2.30	2.33	2.36	2.21
N	67	39	32	68
Deviation from Overall Mean	0.01	0.04	0.07	-0.08

Note: Overall male freshman mean ACT Composite score = 21.5
Overall male freshman mean first-semester GPA = 2.29

Table 3-24.--Extent to Which SMC Male Freshmen with Each MBTI Preference Deviate from Overall Male Freshman Mean ACT Composite Score and First-Semester GPA

	Myers-Briggs Type Indicator Preference							
	E or I		S or N		T or F		J or P	
ACT Composite								
M	20.5	22.9	20.5	22.9	21.6	21.4	21.1	21.8
N	115	88	121	92	73	140	100	113
Deviation from overall mean	-1.0	1.4	-1.0	1.4	0.1	-0.1	-0.4	0.3
First-Semester GPA								
M	2.16	2.46	2.22	2.38	2.40	2.23	2.27	2.30
N	121	85	120	86	70	136	99	107
Deviation from overall mean	-0.13	0.17	-0.07	0.09	0.11	-0.06	-0.02	0.01

Note: Overall male freshman mean ACT Composite score = 21.5
Overall male freshman mean first-semester GPA = 2.29

The ACT composite score conceals some differences that exist among the dominant types in their performance on the four subtests of the ACT battery. The patterns of means and standard deviations among the four MBTI dominant types are listed in Table 3-25.

Table 3-25.--Means and Standard Deviations of American College Test Scores of SMC Male Freshmen, According to MBTI Dominant Types

ACT Scale		Dominant Sensers N=65	Dominant Intuitives N=38	Dominant Thinkers N=30	Dominant Feelers N=63
English	M	18.9	19.6	18.6	19.2
	SD	4.0	3.8	4.1	4.4
Math	M	21.2	21.2	22.5	22.4
	SD	5.8	7.6	5.8	6.0
Social Science	M	22.4	24.0	23.0	22.1
	SD	4.9	4.2	5.1	5.3
Natural Science	M	21.3	22.5	21.8	21.9
	SD	5.9	6.1	5.2	6.0
Composite Score	M	21.1	22.0	21.6	21.6
	SD	4.0	4.4	4.0	4.4

Different correlations emerge when continuous scores of the four dominant types are related to ACT composite scores (Table 3-26). The E-I and S-N continuous scores of the total male freshman group have a significant correlation with ACT composite scores. Introversion and intuition relate positively to ACT composite. Among

sensers, J-P is negatively related to ACT composite; that is, preference for judgment is related to higher ACT performance. Among intuitives, E-I is positively related to the ACT composite score. Among thinkers there is a positive association of both S-N and J-P with ACT scores. Among feelers, three continuous scores are positively associated with ACT composite: E-I, S-N, and J-P.

Fewer significant correlations occur when the variable of interest is first-semester college GPA (Table 3-27). The E-I score is again positively associated with GPA, whereas T-F is negatively related (i.e., T is the negative pole). There are no significant correlations between continuous scores of thinkers and feelers and their grade-point averages. Both sensers and intuitives have a negative correlation between J-P and GPA; intuitives show a high positive correlation between their E-I score and GPA.

These correlation patterns do not gainsay the fact that there appear to be no significant differences among the dominant types with respect to their ACT composite scores and grade-point average. Analysis of variance fails to reject the hypothesis of no differences among the types (Table 3-28).

Although significant differences between dominant types do not exist with respect to ACT composite and first-semester GPA, there are differences which emerge

Table 3-26.--Correlations of MBTI Continuous Scores with ACT Composite Score, by Total SMC Freshman Class and by MBTI Dominant Type (Males Only)

Group	Continuous Score*	N	r	Significance Level
Dominant Sensers	E-I	65	0.21	n.s.
	S-N	65	-0.12	n.s.
	T-F	65	0.15	n.s.
	J-P	65	-0.27	0.027
Dominant Intuitives	E-I	38	0.40	0.013
	S-N	38	0.20	n.s.
	T-F	38	-0.22	n.s.
	J-P	38	-0.14	n.s.
Dominant Thinkers	E-I	30	0.34	n.s.
	S-N	30	0.53	0.003
	T-F	30	-0.27	n.s.
	J-P	30	0.41	0.024
Dominant Feelers	E-I	63	0.32	0.009
	S-N	63	0.48	0.0005
	T-F	63	0.15	n.s.
	J-P	63	0.28	0.026
All Male Freshmen	E-I	196	0.27	0.0005
	S-N	196	0.28	0.0005
	T-F	196	0.02	n.s.
	J-P	196	0.05	n.s.

*Extraversion-Introversion (E-I), Sensing-Intuition (S-N), Thinking-Feeling (T-F), Judgment-Perception (J-P).

Table 3-27.--Correlations of MBTI Continuous Scores with First-Semester College GPA by Total SMC Freshman Class and by MBTI Dominant Types (Males Only)

Group	Continuous Score*	N	r	Significance Level
Dominant Sensers	E-I	67	0.16	n.s.
	S-N	67	-0.14	n.s.
	T-F	67	-0.01	n.s.
	J-P	67	-0.30	0.013
Dominant Intuitives	E-I	39	0.54	0.0005
	S-N	39	0.08	n.s.
	T-F	39	-0.29	n.s.
	J-P	39	-0.34	0.032
Dominant Thinkers	E-I	32	0.22	n.s.
	S-N	32	0.27	n.s.
	T-F	32	-0.13	n.s.
	J-P	32	0.23	n.s.
Dominant Feelers	E-I	68	0.11	n.s.
	S-N	68	0.12	n.s.
	T-F	68	-0.15	n.s.
	J-P	68	0.09	n.s.
All Male Freshmen	E-I	206	0.20	0.004
	S-N	206	0.07	n.s.
	T-F	206	-0.14	0.046
	J-P	206	-0.08	n.s.

*Extraversion-Introversion (E-I), Sensing-Intuition (S-N), Thinking-Feeling (T-F), Judgment-Perception (J-P)

Table 3-28.--Analysis of Variance of ACT Composite Score and First-Semester GPA among the Four MBTI Dominant Types of SMC Male Freshmen

Variable	Source	SS	df	MS	F	p
ACT Composite						
	between groups	21.40	3	7.13	0.40	n.s.
	within groups	3425.55	192	17.84		
	total	3446.95	195			
First-Semester GPA						
	between groups	0.75	3	0.25	0.43	n.s.
	within groups	117.14	202	0.58		
	total	117.89	205			

when MBTI scores and Omnibus Personality Inventory variables are associated. Correlations between OPI raw scores on 14 scales and MBTI continuous scores for the SMC male freshman population are presented in Table 3-29. (A description of each of the OPI variables is in Appendix A.)

According to this pattern of correlations, Extraversion is related positively to Thinking Introversion, Social Extroversion, Impulse Expression, Personal Integration, (low) Anxiety Level, Altruism, and Response Bias. Intuition is associated positively with Thinking Introversion, Thinking Orientation, Estheticism, Complexity, Autonomy, and Religious Orientation (the six scales of the Intellectual Disposition Category), as well as with Impulse Expression. Sensing is correlated positively with Practical Outlook.

Thinking is related positively to Thinking Orientation, Personal Integration, (low) Anxiety Level, Masculinity-Femininity, and Response Bias. Judgment is correlated positively with Personal Integration, (low) Anxiety Level, Practical Outlook, and Response Bias. Perception is related positively to Complexity, Autonomy, and Impulse Expression.

The variety of significant correlations between the continuous scores of MBTI dominant types and their scores on the OPI is indicated in Table 3-30. The word, "total,"

Table 3-29.--Correlations between OPI Raw Scores and MBTI Continuous Scores for SMC Male Freshmen

OPI	Myers-Briggs Type Indicator			
	Extraversion-Introversion	Sensing-Intuition	Thinking-Feeling	Judgment-Perception
TI	-.17*	.41****	-.02	.05
TO	-.06	.47****	-.17*	.02
Es	-.11	.38****	.12	.08
Co	-.14	.54****	.08	.34****
Au	.07	.45****	-.06	.23***
RO	.03	.23***	-.08	.07
SE	-.64****	.09	-.10	-.05
IE	-.33****	.30****	.09	.30****
PI	-.22***	-.02	-.29****	-.17*
AL	-.23***	.01	-.34****	-.16*
Am	-.36****	.12	-.03	-.06
PO	.07	-.47****	-.02	-.19*
MF	.14	-.10	-.25**	-.08
RB	-.18*	.09	-.28****	-.29****

Note: Significance levels: * .05; ** .001; *** .005; **** .005. N=171.

Table 3-30.--Occurrence of Significant Correlations between MBTI Continuous Scores and OPI Raw Scores among SMC Male Freshmen, by Total Class and by the Four MBTI Dominant Types

OPI	Myers-Briggs Type Indicator Continuous Scores			
	Extraversion-Introversion	Sensing-Intuition	Thinking-Feeling	Judgment Perception
Thinking Introversion	(total)	total S, F		
Theoretical Orientation		total S, T, F	(total), (N)	
Estheticism		total S, F		
Complexity	(S)	total, S, N, F		total, S
Autonomy	T	total, N, T, F		total, T
Religious Orientation		total, T, F		
Social Extroversion	(total), (S), (T), (F)	S, (N)		S, (T), (F)
Impulse Expression	(total), (S), (F)	total, S		total, S
Personal Integration	(total)	total	(S), (T)	total, (T)
Anxiety Level	(total), (F)		(total), (S), (N)	(total), (F)
Altruism	(total), (S), (T)			
Practical Outlook		(total), (N), (T), (F)		(total)
Masculinity-Femininity			(total), (S)	
Response Bias	(total)		(total), (S), (T)	(total), (S), (F)

Note: Negative correlations are indicated by parentheses
S = Sensers; N = Intuitives; T = Thinkers; F = Feelers.
Level of significance $\leq$ .05.

represents the significant correlations from Table 3-29. The letters S, N, T, and F refer to dominant types for which correlations with various OPI scales are significant. In some cases the correlation is significant only for the total group. In other instances one or more dominant types show a significant correlation, but not the total group of male freshmen.

The OPI raw scores on which these correlations are based are reproduced in Table 3-31, according to the four dominant types. Differences among the types are more noticeable on these scales than on those reporting ACT composite and first-semester GPA.

In Figure 3-3 the distinctive patterns of rounded mean standard scores of dominant sensers and intuitives are portrayed. Differences on the intellectual scales (TI, TO, Es, and Co) are particularly striking, as well as those on Autonomy, Social Extroversion, Impulse Expression, Altruism, and Practical Outlook.

The composite profile in Figure 3-4 shows fewer large variations between dominant thinkers and feelers. Personal Integration and Anxiety Level vary by more than one-half standard deviation, however. Considered together, the four profiles produce a more intricate pattern. Yet, sensers' and intuitives' mean scores appear at the outer edges of the distribution in ten of the fourteen scales.

Table 3-31.--Means and Standard Deviations of OPI Raw Scores of SMC Male Freshmen, according to MBTI Dominant Type

OPI Scale	Sensers M (SD)	Intuitives M (SD)	Thinkers M (SD)	Feelers M (SD)
Thinking Introversion	17.2 (6.8)	24.8 (7.3)	21.9 (6.0)	21.3 (6.3)
Thinking Orientation	15.7 (4.8)	19.5 (5.0)	19.3 (5.7)	18.0 (5.2)
Estheticism	8.8 (4.4)	12.2 (4.7)	10.9 (4.5)	10.5 (4.4)
Complexity	13.1 (4.3)	19.0 (5.2)	16.1 (4.5)	16.5 (4.4)
Autonomy	22.4 (5.8)	26.9 (7.0)	25.4 (6.3)	22.4 (6.5)
Religious Orientation	13.2 (4.6)	13.9 (5.0)	14.8 (4.8)	13.5 (4.2)
Social Extroversion	20.4 (7.0)	25.8 (5.8)	24.7 (8.3)	22.5 (7.5)
Impulse Expression	30.0 (8.6)	36.0 (8.5)	33.4 (7.6)	35.2 (7.5)
Personal Integration	28.5 (10.0)	30.2 (10.2)	32.4 (11.1)	26.4 (10.2)
Anxiety Level	10.2 (4.3)	11.5 (4.2)	13.1 (4.0)	9.7 (5.3)
Altruism	17.7 (5.2)	20.9 (5.3)	19.2 (6.2)	18.1 (5.5)
Practical Outlook	18.0 (4.7)	12.8 (5.5)	15.3 (4.6)	16.0 (5.2)
Masculinity-Femininity	31.1 (5.5)	28.5 (6.6)	30.9 (4.8)	29.8 (5.3)
Response Bias	11.1 (4.1)	12.0 (4.4)	12.8 (4.9)	11.1 (3.7)
N =	58	30	29	51

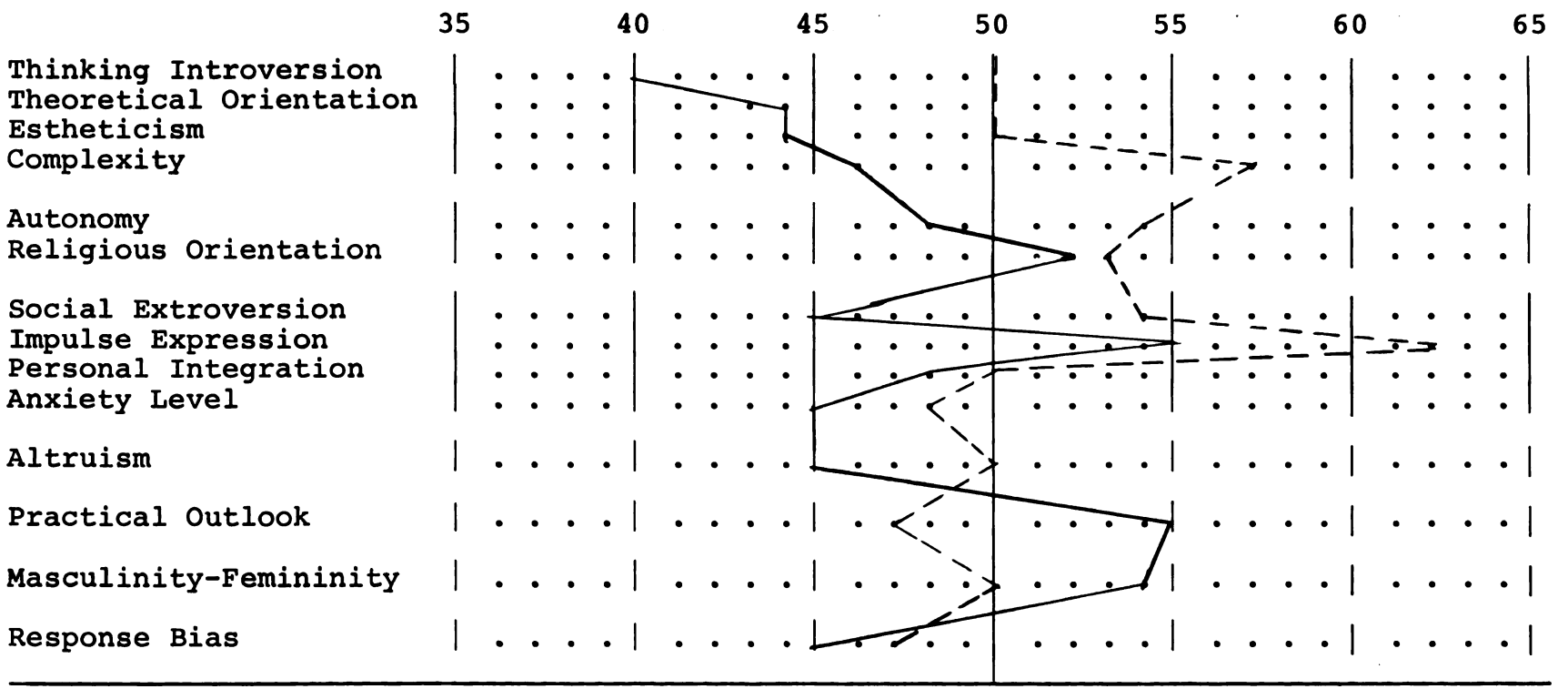

Figure 3-3.--Composite Profile of OPI Mean Standard Scores of SMC Male Freshmen--Dominant Sensers and Dominant Intuitives

Note: Standard scores are based on OPI norms, on which the mean is 50 and the standard deviation is 10. Solid line denotes mean standard scores of the 58 dominant-senser males; broken line denotes mean standard scores of the 30 dominant-intuitive males.

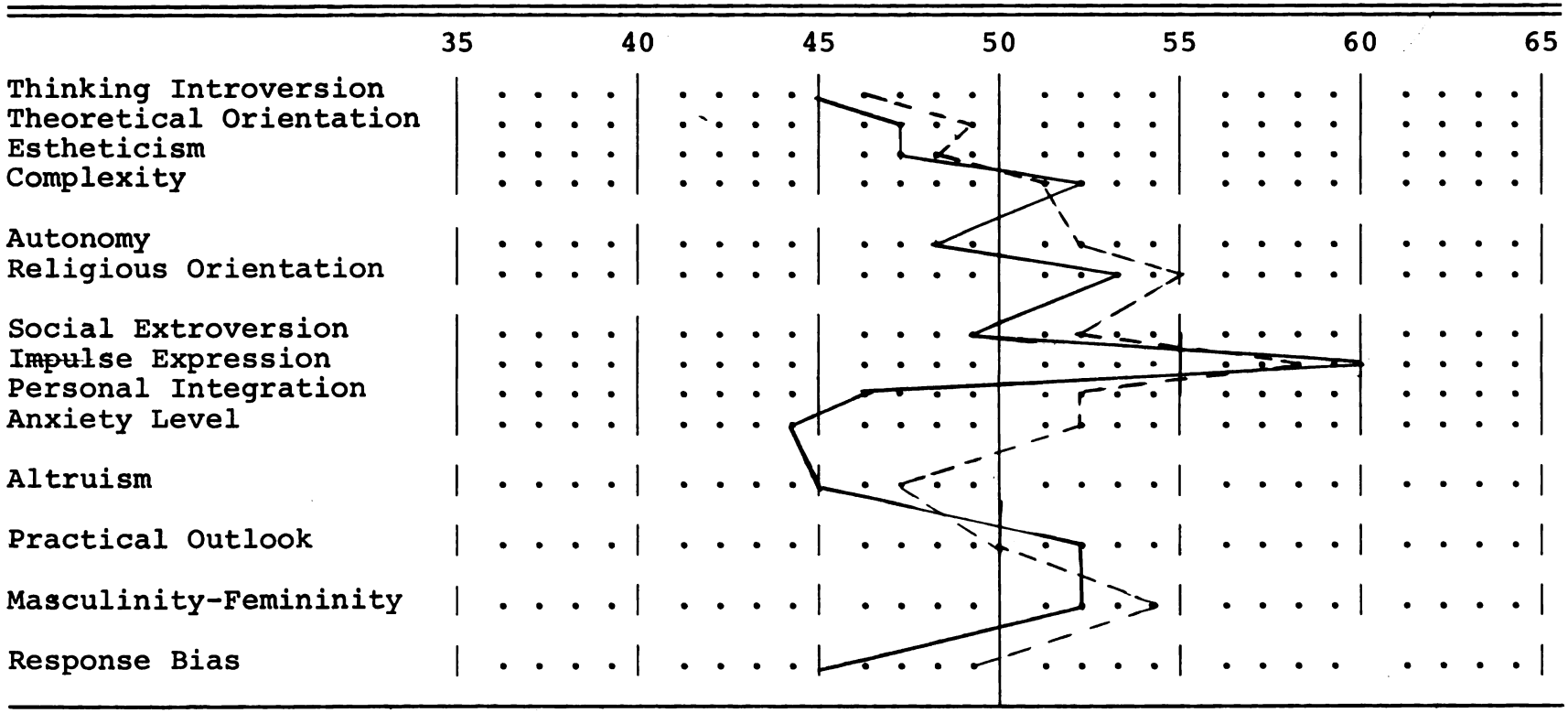

Figure 3-4.--Composite Profile of OPI Mean Standard Scores of SMC Male Freshmen--Dominant Thinkers and Dominant Feelers.

Note: Standard scores are based on OPI norms, on which the mean is 50 and the standard deviation is 10. Solid line denotes mean standard scores of the 51 dominant-feeler males; broken line denotes mean standard scores of the 29 dominant-thinker males.

Religious Orientation, Personal Integration, Anxiety Level, and Response Bias are the exceptions.

The descriptive and comparative data in this section provide a wealth of information about the Saint Mary's College freshman population. In order to bring the conclusions into perspective, a summary of the comparisons between volunteers and nonvolunteers, and between the research sample and nonvolunteers, is given in Table 3-32. The research sample is the group on which the conclusions of the small-group behavioral development project are based.

Instrumentation: Omnibus Personality Inventory (Form F)

Form F of the Omnibus Personality Inventory (Heist and Yonge, 1968) is the product of a decade of research in college student development, sponsored in great part by the professional staff of the Center for Research and Development in Higher Education, University of California at Berkeley. Designed and tested empirically in various collegiate settings, the OPI focuses on personality variables which are of interest in studying normal college students in the course of their years in college.

Although the authors of the OPI maintain that the instrument is not based on any particular theory of

Table 3-32.--Summary of Comparisons between Volunteer and Nonvolunteer SMC Male Freshmen

No Significant Differences	Significant Differences
Male Volunteers and Nonvolunteers	
First-Semester GPA	Father's Education*
American College Tests	Mother's Education*
Omnibus Personality Inventory:	Omnibus Personality Inventory:
"Intellectual Disposition Category"	Thinking Introversion
Thinking Orientation	Complexity
Estheticism	Autonomy
Religious Orientation	Altruism
Social Extroversion	Practical Outlook
Impulse Expression	Masculinity-Femininity
Personal Integration	
Anxiety Level	
Response Bias	
Myers-Briggs Type Indicator:	Myers-Briggs Type Indicator:
Frequency of Thinking and Feeling Preference	Frequency of Extraversion and Introversion Preference
Frequenty of Judgment and Perception Preference	Frequency of Sensing and Intuition Preference
Means of all MBTI Preference Scores	
Research Sample and Male Nonvolunteers	
First-Semester GPA	Father's Education*
American College Tests	
Mother's Education*	
"Intellectual Disposition Category" on the OPI	
Myers-Briggs Type Indicator:	Myers-Briggs Type Indicator:
Frequency of Sensing and Intuition Preference	Frequency of Extraversion and Introversion Preference
Frequency of Thinking and Feeling Preference	Frequency of Judgment and Perception Preference
Means of all MBTI Preference Scores	

*Both male and female freshmen are included in this comparison.

personality, they do stress that its approach to human behavior is a developmental one. The fourteen scales of the OPI deal with "the relevant aspects of the individual as a changing, learning organism in the special social contexts of academic institutions" (Heist and Yonge, 1968, 3).

The OPI is concerned with three major domains of assessment: intellectual vs. non-intellectual values and interests, liberal vs. conservative attitudes, and social-emotional adjustment characteristics. These variables have been shown to be subject to change in young adults who experience the impact of college (Feldman and Newcomb, 1969). (A description of each of the fourteen scales of the OPI is given in Appendix A.)

The two stated purposes of the Inventory are "to provide a meaningful, differentiating description of students and a means of assessing change" (Heist and Yonge, 1968, 3). The same scales which are useful in describing types or subgroups of students serve as change measures over time. Thus, the OPI is compatible with a typological approach to student development as well as with a developmental view of personality.

The OPI is particularly noteworthy because it has been used and refined in a series of comprehensive, longitudinal studies of personality development among college students (Chickering, 1969; Hassenger, 1966; Katz and Associates, 1968; McConnell et al., forthcoming; Trent, 1967; Trent and Medsker, 1968, and Webster

et al., 1962). These studies report varying degrees of change not simply attributable to a unitary campus impact.

Longitudinal research also indicates that the factor structure of the OPI is stable over time (Elton and Terry, 1969; Stewart, 1964) and that the instrument is sensitive in differentiating and describing types and subgroups within a campus population (Dispenzieri et al., 1967; Elton and Rose, 1968).

An internal-consistency reliability estimate for the fourteen OPI scales, based on responses of freshmen at 37 colleges, reports coefficients (Kuder-Richardson Formula 21) ranging from .67 to .89. Test-retest correlations based on pre-test and post-test performance of the Saint Mary's College research sample (three months intervening) range from .58 to .90 (Table 4-1).

Instrumentation: Myers-Briggs Type Indicator

The Myers-Briggs Type Indicator (MBTI) is a self-report inventory specifically designed to implement Jung's theory of type (Myers, 1962; Jung, 1924). The chief role of the MBTI is to ascertain "people's basic preference in regard to perception and judgment, so that the effects of the preferences and their combinations may be established by research and put to practical use" (Myers, 1962, 1).

The four dimensions of the Indicator seek to measure those preferences which, in turn, make up the individual's behavioral type. There are, therefore, 16 possible combinations of preferences, made up of one of two possibilities in each preference:

Index	Preference for	Affects an individual's choice as to
E-I	Extraversion or Introversion	Whether to direct perception and judgment upon environment or world of ideas
S-N	Sensing or Intuition	Which of these two kinds of perception to rely on
T-F	Thinking or Feeling	Which of these two kinds of judgment to rely on
J-P	Judgment or Perception	Whether to use judging or perceptive attitude for dealing with environment

(Myers, 1962)

Thus, a person typed as ENFJ is oriented principally and habitually to the outer environment, rather than to his inner world of ideas and images, prefers to use intuition as the predominant mode of perception, relies on feeling in making judgments about what he perceives, and customarily uses judgment (in this case, feeling) in dealing with the environment.

The Indicator reports eight preference scores (E, I, ... P) and four continuous scores (E-I, S-N, T-F, and J-P), as well as a four-letter classification (e.g.,

ISTP). Continuous scores are often used in statistical analyses of MBTI results, although Myers states that the letter is the most important part of the score. The numerical score indicates how strongly the preference is reported, which is not necessarily the same as how strongly it is felt or how pervasive it is in reality.

The Indicator has been criticized for failing to demonstrate statistically the supposedly dichotomous nature of the Jungian typology. The debate is somewhat inconclusive. On the one hand, the author considers the MBTI "a stimulus to the user's insight," recognizing that it is "no substitute for good judgment" (Myers, 1962, 5). On the other hand, in spite of a wealth of comparative data in the manual, some reviewers conclude that statistical analysis does not prove beyond a doubt that the types do, in fact, reflect psychological reality (Siegel, 1963; Stricker and Ross, 1962, 1964a, 1964b; Webb, 1964). Critics on both sides advise users of the MBTI to validate its results on the basis of relationships with other observed behavioral measures.

MBTI continuous scores have about the same reliability as better known personality inventories (such as the Minnesota Multiphasic Personality Inventory, the California Personality Inventory, and the Guilford-Zimmerman Temperament Survey). It would seem advisable to judge the validity of the Myers-Briggs Type Indicator

on the basis of its ability to distinguish behavioral types in various settings.

One reviewer considers the Indicator of considerable utility because of the meaningful relationships which exist between the Myers-Briggs types and a wide range of variables: personality, ability, interest, value, aptitude and performance measures, academic choice, occupational choice and perseverance, and behavior ratings (Buros, 1965, 321-325). Myers also offers a suggestion not unlike Jung's own advice about his typological approach: "If the user prefers, . . . he can use the Indicator empirically, as he would any other test, for what he finds it tells him" (1962, 4).

Use of the MBTI with a group of Jungian analysts in California indicates a higher-than-average incidence of introvert intuitive types. Indicator results also agree with the analysts' self-typing (Bradway, 1964). Preference for perception is related to the "impulsive" classification in Heath's model of personality (Poe, 1968). Type preferences are related to frequency of personality change among college students (Stalcup, 1967), preferences for different communications media and fictional heros (Anast, 1966a, 1966b), and selection of religious vocations (Greenfield, 1969; Nauss, 1968; Saunders, 1957). Findings relating teacher and student types, however, are somewhat inconsistent (Taylor, 1968).

Similarity of type is positively related to roommate satisfaction (Eigenbrod, 1969) and to length of client-counselor relationship (Mendelsohn and Geller, 1963; Mendelsohn, 1966), as well as to counselor designation of ideal clients (Thompson, 1969). Complementarity of type is related to positive attitude toward small-group interaction (McCary, 1970).

Specific Indicator preferences are associated positively with a number of behaviors. Intuition and perception are related to creativity (MacKinnon, 1962a) and to use of counseling services (Mendelsohn and Kirk, 1962). Intuition is related to T-group behavior and effectiveness (Steele, 1968).

Preferences for sensing and for a judging attitude affect the presentation of the self in a group context (Insel et al., 1968). Other studies find the extraversion-introversion preference to be associated with situational anxiety (Laemmle, 1968); the judging attitude, to academic improvement after a study skills course (Fretz and Schmidt, 1967), and the sensing-intuition preference, to taste acuity (Corlis et al., 1967).

Formation and Composition of the Small Groups

Freshmen entering Saint Mary's College in the fall term of 1969 completed the Myers-Briggs Type Indicator during orientation week. In early December, two weeks

prior to the end of the semester, the freshmen completed Form F of the Omnibus Personality Inventory. One week after the administration of the OPI, all freshmen received a letter inviting them to participate in a small-group student development project. (Copies of this and other letters used in the research are in Appendix B.)

At the beginning of the second semester, in January, 1970, volunteers who had completed both the MBTI and the OPI were matched on the basis of their Myers-Briggs type indices. In cases where more than two volunteers had the same MBTI index, students were ranked on the basis of the strength of the preference score for the dominant function and then matched in pairs. Matching was made on the basis of agreement on all four letters of the index.

After matching had taken place, members of each pair were randomly assigned to treatment (small-group) and control (deferred) conditions. Each small group met once a week for a period of six weeks. A senior resident assistant was assigned to each group as its facilitator.

The composition of the small groups according to MBTI indices is shown in Table 3-33. Of the original 24 pairs of subjects in the study, one pair was dropped from the data analysis because a member left school after the second week of group meetings. A more unfortunate circumstance, as far as the completeness of the study is

Table 3-33.--Composition of Small Groups in the Research Project according to MBTI Type Index

	Treatment	Control
Sensers:	ESTP	ESTP
	ESFP	ESFP
	ESFP	ESFP
	ESFP	ESFP
	ESFP	ESFP
	ISTJ	ISTJ
	ISTJ**	ISTJ**
	ISFJ	ISFJ
Intuitives:	ENTP	ENTP
	ENFP	ENFP
	ENFP	ENFP
	ENFP**	ENFP**
	ENFP**	ENFP**
	ENFP*	ENFP*
	INFJ	INFJ
Thinkers:	ESTJ	ESTJ
	ESTJ	ESTJ
	ESTJ	ESTJ
	INTP**	INTP**
Feelers:	ESFJ	ESFJ
	ESFJ**	ESFJ**
	INFP	INFP
	INFP	INFP
	INFP	INFP

*Treatment-control pair deleted from analysis because one student dropped out of school.

**Treatment-control pair deleted from analysis because one of the pre-test OPI answer sheets is too incomplete for valid scoring.

concerned, is the fact that in five pairs of subjects, one of the pre-test (December) OPI results was discovered to be unreliable because of too many unanswered items. Because this fact was not realized until after the groups were formed and had started meeting, the persons involved continued with the groups but had to be excluded from the data analysis. Thus, the final research sample includes eighteen pairs of subjects, 36 participants in all. No division in the data is made by sex; there is only one girl in the treatment and one in the control group category.

A comparison of the frequency of Myers-Briggs dominant and auxiliary functions in the total freshman class and in the research sample is given in Table 3-34. The differential rate of volunteering, already described, and the unsystematic variance in types among the freshmen produce a nonsymmetrical comparison. In the final data analysis there are no representatives from the thinking-with-intuition category (ENTJ's and INTP's). These two indices are, however, the least represented in the total freshman class (6.5%).

Size and homogeneity are among the factors related to peer-group effectiveness in influencing the behavior of participants (Newcomb, 1966). These factors are also significant in the formation of the groups in this project. Size is controlled by creating groups of between

Table 3-34.--Frequency of MBTI Dominant Types and Auxiliary Functions in the SMC Freshman Class and in the Research Sample (Males and Females Combined)

Dominant Type	Auxiliary Function	Index	Freshman Class		Research Sample	
			N	%	N	%
Sensing			71	30.6	14	38.9
	with thinking	ESTP, ISTJ	27	11.6	4	11.1
	with feeling	ESFP, ISFJ	44	19.0	10	27.8
Intuition			52	22.4	8	22.2
	with thinking	ENTP, INTJ	16	6.9	2	5.5
	with feeling	ENFP, INFJ	36	15.5	6	16.7
Thinking			36	15.5	6	16.7
	with sensing	ESTJ, ISTP	21	9.0	6	16.7
	with intuition	ENTJ, INTP	15	6.5	0	
Feeling			73	31.5	8	22.2
	with sensing	ESFJ, ISFP	37	15.9	2	5.5
	with intuition	ENFJ, INFP	36	15.5	6	16.7

four and eight members, not counting the facilitator. Conditions did not, however, permit equal size across all groups.

Homogeneity is achieved by placement on the basis of the dominant type as indicated by the MBTI. Previous research and theory support the importance of homogeneity in providing a secure base from which the individual can move toward stimulating encounters with his personal, social, and physical environment. Within each of the homogeneous (secure) groups in this study, however, are individuals whose auxiliary functions are different. It is the presence of two possible auxiliary functions among the members of a given group that makes the group complementary and provides the opportunity for modeling and developing new behaviors.

The Small-Group Facilitators

Before the group interaction process is described, it is necessary to comment on the selection and training of the senior resident assistants who serve as the four group facilitators in this study. (A fifth group, with a senior RA as facilitator, met in addition to the four experimental groups, but it was made up of extra volunteers, for whom there were no available, identical pair-mates.)

Group facilitators were selected in the following manner. A letter of invitation to participate as a group facilitator in the student development project (reproduced in Appendix B) was sent to a group of senior resident assistants who had been recommended for their interest in working with people, their ability to relate well to others, and their personal maturity. Five resident assistants, all seniors, responded affirmatively.

These five seniors met with the researcher seven times during the two weeks prior to the beginning of the freshman small-group sessions. The five facilitators and the researcher formed, in effect, their own small group and experienced the same kinds of process and behavior strategies that were later experienced in the separate freshman groups.

The content of the facilitator training sessions included discussion of the Jungian typology and the Myers-Briggs implementation and measurement of it. The facilitators had taken the Myers-Briggs Type Indicator in the previous semester as part of the RA selection and training program. They also had attended a weekend group encounter experience, in company with all of the resident assistants from Saint Mary's College.

Facilitators were assigned to the four experimental groups according to the similarity of their Myers-Briggs type with the members of the freshman groups. The five

available facilitators represent three of the four dominant types. (There was no dominant feeling type in the facilitator group.) A dominant senser (ESFP) was assigned as facilitator for the sensers; a dominant intuitive (ENFP), for the intuitives; a dominant thinker (ESTJ), for the thinkers. A dominant senser with auxiliary function of feeling (ISFJ) was assigned as facilitator for the feelers. The fifth group facilitator, who met with a non-experimental group composed of additional volunteers who did not fit into the research design, was also a dominant thinker (ESTJ).

All group sessions were taped, including the facilitators' group meetings. The project director and the facilitator reviewed the tape of each group's session prior to its next meeting. In addition, the facilitators continued their own weekly group meetings throughout the duration of the small-group sessions.

Group facilitators had not taken the Omnibus Personality Inventory prior to the project. They were not aware of the results of the pre-test administration of the OPI, nor were the freshmen themselves, until after the experiment had been concluded. The facilitators were responsible for scheduling the group sessions, reminding the participants, and setting the stage, as it were, for each small group session. Their behavior in the groups was quite flexible, however, and their personal style was

manifest in the ebb and flow of the group process.

The Small-Group Interaction

Three kinds of behavioral development are fostered, in theory, by the small-group interaction in this project: (1) experiencing and reinforcing behaviors common to all members of the group; (2) experiencing and understanding behaviors not common to all members, and (3) trying out new behaviors, aided by the modeling of the behavior by others in the group and supported by the relative security of the complementary group.

Each of the four groups, composed of freshmen who have the same dominant function, is concerned with one of two possible combinations of auxiliary functions: sensing and intuition in dominant thinkers and feelers; thinking and feeling in dominant sensers and intuitives. The focus of interaction in these two kinds of groups differs accordingly.

Before the different approaches based on the auxiliary functions are described, it is necessary to list the common processes with which each group is concerned at the outset (one session, or at the most, two).

Purpose	Means
(1) To become comfortable with one another in the small-group setting	Introductions, conversation
	Exploration of general purposes of the group
(2) To experience, understand, express, and accept the similar behaviors that exist in the group	Focus on personal interests, attitudes, and other behaviors that group members exhibit
	Become aware of the presence and relative strength of the dominant preferred behavior
	Communication and discussion of Myers-Briggs results
(3) To become sensitive to the uniqueness of each person, as well as to the common behaviors each shares to some extent with other group members	Focus on individuals and their unique experiences and behaviors, against the background of the dominant preferred behavior, noting the different behaviors implied by the preferred auxiliary function

The major focus of this study, however, is on behavior change. Therefore, the group moves from an experience of relative homogeneity to a concern with understanding and developing those new behaviors which can be added to the person's repertoire most readily, with minimal stress and anxiety, because of the group's composition. Two basic sets of strategies are employed, according to the presence of different auxiliary processes in the group members.

In the first instance, the small groups composed entirely of dominant sensers or dominant intuitives have among their members persons whose auxiliary function is

either thinking or feeling. Both thinking and feeling behavior are present, as auxiliary preferences, in a dominant-senser group, as well as in a dominant-intuitive group.

Similarly, those groups composed of dominant thinkers or dominant feelers include in their membership persons whose auxiliary process is either sensing or intuition. Both auxiliary functions, sensing and intuition, are present in the dominant-thinker and dominant-feeler groups.

In each case, the small groups focus on the next portion of the agenda:

Purpose	Means
(4) To experience, understand, express, and accept behaviors that are different from one's own auxiliary function	Focus on different reactions of persons in the group to the stimuli in the college environment, in the group itself, and in past environments
(5) To try out within the group setting new behavior relating to the auxiliary process which one has not developed himself	Focus on the behavior to be learned Observe someone model the behavior who has already developed it Practice the new behavior within the group Obtain feedback from group members Proceed with further modeling, trial, and feedback

Two sets of specific strategies are employed, one for each of the two kinds of behavioral situations. In dominant-senser and dominant-intuitive groups, behavioral development focuses on thinking and feeling, the related auxiliary functions.

Purpose	Means
(6) To facilitate the development of thinking behavior in those persons whose auxiliary function is feeling	Persons whose thinking behavior is more developed serve as models of rational decision-making and assertiveness in social situations staged in the group (role playing) Persons seeking to develop assertiveness practice roles which require it (student-teacher interaction, shopping, employer-employee relations, club meetings, etc.) Positive feedback from more assertive group members and from the facilitator Use of alternate modeling and trials, with a variety of situations suggested by group members Opportunity for every group member to practice and participate in role-playing situations
(7) To facilitate the development of feeling behavior in those persons whose auxiliary function is thinking	Persons in the group whose feeling behavior is more developed and who, therefore, are more comfortable with the experience of feelings and more aware of their own and others' feelings, serve as models of this behavior

Purpose	Means
	The group focuses on feelings which arise from being in close proximity to persons and in face-to-face, "trust" situations
	Models and learners, successively, focus on, become aware of, and express their feelings in the present context of the group
	Positive feedback from models and the facilitator
	Opportunity for every group member to participate in the experience and the feedback

The second set of strategies, employed with dominant-thinker and dominant-feeler groups, focuses on the related auxiliary functions of sensing and intuition.

Purpose	Means
(8) To facilitate the development of sensing behavior in those persons whose auxiliary function is intuition	Persons whose sensing is more developed model their perceptive responses to a specific stimulus in the environment, conveying all the rich detail and specific properties of the object (a picture, scene, place, room, etc.)
	Persons seeking to develop sensing try, similarly, to attend to all details of a stimulus, modeling their trial behavior on the auxiliary-sensers in the group
	Positive feedback from participants and the facilitator

Purpose	Means
	Use of alternate modeling and trials, along with a variety of stimuli suggested by the group members and their facilitator
	Opportunity for every group member to practice responding to a stimulus and to participate in feedback
(9) To facilitate the development of intuitive behavior in those persons whose auxiliary function is sensing	Persons whose intuition is more developed model their intuitive responses in fantasy and imagination to a stimulus in their environment (a picture, situations, person, idea, etc.)
	Persons seeking to develop intuition try to fantasize on an object, modeling their trial behavior on the auxiliary-intuitives in the group
	Positive feedback from participants and the facilitator
	Use of intense sensory stimulation (sound, color, vivid description) to trigger an imaginative or fantasy reaction
	Opportunity for every group member to fantasize and participate

In each small group there are two areas of attempted behavior change. One set of groups (dominant sensers and intuitives) alternates between sessions devoted to exploring and developing thinking behavior and sessions focusing on feeling behavior. The other set of groups (dominant thinkers and feelers) alternates between developing intuitive

behavior and focusing on sensing behavior. Such alternation provides successive opportunities for each group member to serve in a more comfortable role as model of his customary behavior. It also reduces the anxiety a person might experience in being constantly expected to try out new behavior; that is, it lessens the threat associated with change. This approach also emphasizes that all these behaviors are good and that all human beings can develop a wide variety of behaviors.

The small groups in this project met six times, once weekly for approximately one and a half to two hours, depending upon circumstances. The last four sessions were particularly devoted to the auxiliary behaviors. In a seventh session, group members and their deferred-status counterparts completed the Omnibus Personality Inventory. The interval between pre-test and post-test was a little more than three months. Raw scores on the post-test administration of the OPI are the dependent variables in the research design.

Hypotheses and Research Design

Studies of human development and of the effects of group interaction on individual behavior suggest the major hypothesis that participation in small-group interaction will have an effect on student behavior. Similarly, both the theory of personality type and the variation in

behavior that has been shown to exist among types of persons suggest a corollary hypothesis that behavioral change will not be identical for all types of persons, or for groups composed of different dominant types.

In order to hypothesize the behaviors in which each dominant-type group will change, one could resort to definitions of the personality variables measured by the Omnibus Personality Inventory and match them logically or intuitively with the idealized outcomes of group behavioral development. Because there are no studies which point the way in predicting specific behavioral outcomes of this nature, a better method of specifying the hypothesis of differential change is to consult the correlation matrices of OPI and MBTI variables.

Correlations reported in the OPI Manual (reproduced in Appendix C) and those obtained from the Saint Mary's freshman population (Table 3-29) are in basic agreement in identifying variables related to the four MBTI functions used in composing the groups and structuring the group process.

The hypotheses of interest in the small-group behavioral development project can thus be stated in these terms:

(1) Second-semester college freshmen who participate in a small-group experience structured according to behavioral preferences and focused on behavioral

development undergo greater change in attitudes and values than do nonparticipants.

(2) Small groups formed according to complementarity of personality type, with similar dominant and dissimilar auxiliary functions present in each group, differ from one another in their patterns of change in attitudes and values as a result of the group experience.

(3) Dominant-thinker and dominant-feeler groups, in which behavioral development focuses on the auxiliary functions of sensing and intuition, change significantly on OPI scales related to sensing and intuition: Thinking Introversion, Theoretical Orientation, Estheticism, Complexity, Autonomy, Religious Orientation, Impulse Expression, and Practical Outlook.

(4) Dominant-senser and dominant-intuitive groups, in which behavioral development focuses on the auxiliary functions of thinking and feeling, change significantly on OPI scales related to thinking and feeling: Thinking Orientation, Personal Integration, Anxiety Level, Masculinity-Femininity, and Response Bias.

The research design employed in the small-group behavioral development project is a pretest-posttest

control group design (Campbell and Stanley, 1963). Treatment and control groups are determined by stratified random sampling from among the group of volunteer freshmen, according to the Myers-Briggs typology. The design is expressed in this form:

$$R\ O_1\ X\ O_2$$

$$R\ O_3\quad O_4$$

The design controls for a number of potentially confounding variables which are a threat to internal validity: testing, maturation, history, instrumentation, selection, and experimental mortality (Campbell and Stanley, 1963). Analysis of covariance with pretest OPI scores as the covariate would correct for regression effects. Because the fourteen OPI scales are intercorrelated in varying degrees, it is necessary to employ a multivariate analysis to test for overall significance on all scales (Bock, 1968; Bock and Haggard, 1966). The statistical program used in the data analysis is Finn's "Multivariate Analysis of Variance," adapted for the CDC 3600 system (Finn, 1967). Post-hoc comparisons identify specific treatment-group interaction effects in those cases where overall significance is reached (Hays, 1963). All significance tests are set at the .05 level of confidence.

A multivariate analysis of covariance of the fourteen OPI scales was not obtainable, whether because of small sample size or because of limitations in the number of degrees of freedom needed for inclusion of the covariates. This fact and the relatively high correlations between pre-test and post-test OPI scores for the research sample (.58 to .90) suggest that a multivariate test for equality of gain scores is an appropriate technique in these circumstances. The analysis in the next chapter relies on this statistic.

Summary

The freshman class from which the research sample is drawn is a relatively homogeneous population: predominantly white, middle-class, urban, Catholic, Midwestern males. The range of previous academic performance is, perhaps, broader than in other, more selective liberal arts colleges, but the pattern of college objectives, interests, and majors is typical of a cross-section of four-year institutions.

Volunteers do not differ from nonvolunteers in the class with respect to college grade-point average, previous academic achievement (measured by the American College Test), and intellectual disposition (measured by six scales of the Omnibus Personality Inventory). Neither are the various dominant types (identified by the

Myers-Briggs Type Indicator) significantly different in their academic performance (ACT and GPA).

However, a number of variables distinguish these groups from one another. Volunteers score higher than nonvolunteers on the OPI scales of Thinking Introversion, Complexity, Autonomy, and Altruism; their scores on Practical Outlook and Masculinity-Femininity are lower than those of the nonvolunteer freshmen. Dominant intuitives volunteer at almost twice the rate of each of the other three types. In the final research sample, however, the Myers-Briggs preferences cluster in the same direction as those in the total male freshman population of Saint Mary's College.

The two instruments used in this study, the Omnibus Personality Inventory and the Myers-Briggs Type Indicator, are described in this section as well. Both the OPI and the MBTI provide descriptive and comparative data on the total freshman class, the volunteer and nonvolunteer segments, and the research sample itself. Intercorrelations of OPI and MBTI results, together with their relationships to other variables, provide meaningful ways to discriminate among the four dominant types: sensers, intuitives, thinkers, and feelers.

The small groups in the research project are described in terms of their formation and program of

interaction. Volunteer freshmen are matched according to similarity of type, as defined by their scores on the MBTI, and randomly assigned to treatment and control status. The four groups are homogeneous with respect to the dominant function (sensing or intuition; thinking or feeling) and complementary with respect to the auxiliary function (thinking and feeling, in the first two cases; sensing and intuition, in the second instance).

Group facilitators are senior resident assistants who volunteered for the project and participated in their own small group in advance of the freshman-group sessions. The four groups met for a total of six weekly sessions, each lasting between one and a half and two hours. All sessions were taped so that the project director and the facilitators could review each meeting and discuss procedures for the next one.

The Omnibus Personality Inventory (Form F) is the pre-test and post-test measure in this multivariate design. In order to achieve an overall test statistic for the fourteen dependent variables of the OPI, the research design calls for a multivariate analysis of variance of gain scores to test the hypothesis that participation in small-group interaction results in behavior change irrespective of the group's dominant type and the separate variables of the OPI. Post-hoc comparisons are calculated to specify group-treatment effects attributable

to the unique factors in each group, in the event of an overall significant effect. Finally, a more specific hypothesis predicts that differential change will occur on those OPI variables that are known to be associated with one or more of the MBTI functions of sensing, intuition, thinking, and feeling.

CHAPTER IV

ANALYSIS OF DATA

Thirty-six volunteer subjects from the freshman class of Saint Mary's College participated in the small-group behavioral development study. The participants, all second-semester freshmen, were matched on the basis of type scores on the Myers-Briggs Type Indicator and randomly assigned to treatment and control groups. Each of the four treatment groups met once a week for a period of six weeks; each had its own group facilitator, a senior resident assistant who was also similar to group members with respect to his classification on the MBTI.

Both control and treatment group subjects had taken Form F of the Omnibus Personality Inventory in the latter part of their first semester (December, 1969), prior to being invited to participate in the group project. A second administration of the OPI, after the treatment groups had met, took place in mid-March, 1970. The fourteen scales of the OPI (defined in Appendix A) are the dependent variables in the design. Dominant-type groups (based on the MBTI) comprise the independent variable.

The thirty-six subjects for whom complete pre-test and post-test data are available are divided among the

dominant groups in this fasion. The dominant-senser (S) group has seven members each, in both treatment and control situations. The dominant-intuitive (N) and dominant-feeler (F) groups have four members each, in both treatment and control conditions. The dominant-thinker (T) group has three members in both treatment and control classifications.

Because OPI variables are intercorrelated in a complex pattern, univariate tests, such as individual F-tests, are unsuitable because of their lack of statistical independence. Not only are the fourteen OPI scales intercorrelated in known patterns on available samples, but, since they are all obtained from the same subjects, they are correlated in some arbitrary and unknown manner in the present research sample. Multivariate tests take into account the correlations among all variables on a multifaceted inventory such as the OPI (Bock and Haggard, 1968).

The correlations between pre-test and post-test scores of each of the 14 OPI variables for the 36 subjects in the research project are given in Table 4-1. These correlations, ranging from .58 for Altruism to .90 for Thinking Introversion, are from two administrations of the same form across an interval of thirteen weeks (early December to mid-March). Because all of the correlations are above .50, a multivariate analysis of gain scores was selected as the appropriate test of the hypotheses. The computer program used in the analysis is Finn's Multivariate Analysis of Variance, adapted for the CDC 3600 (Finn, 1967).

Table 4-1.--Correlations Between Pre-test and Post-test OPI Raw Scores of All Subjects in Treatment and Control Groups

Thinking Introversion	.90	Impulse Expression	.75
Thinking Orientation	.77	Personal Integration	.77
Estheticism	.83	Anxiety Level	.75
Complexity	.86	Altruism	.58
Autonomy	.86	Practical Outlook	.83
Religious Orientation	.70	Masculinity-Femininity	.72
Social Extroversion	.81	Response Bias	.69

NOTE: Interval is three months; N=36

Hypothesis 1: Second-semester college freshmen who participate in a small-group experience structured according to behavioral preferences and focused on behavioral development undergo greater change in attitudes and values than do non-participants.

Means and standard deviations of pre-test and post-test OPI raw scores of treatment (N=18) and control (N=18) groups are given in Table 4-2. Composite profiles, derived by rounding off the raw scores and plotting standard-score positions on the graph, are shown separately for treatment and control groups as a whole. Pre-test and post-test standard scores (in whole numbers) of the eighteen treatment-group subjects are profiled in Figure 4-1. The standard-score profile of the eighteen control-group subjects is given in Figure 4-2.

Table 4-2.--Means and Standard Deviations of OPI Pre-test and Post-test Raw Scores of Treatment and Control Groups

	TREATMENT GROUPS				CONTROL GROUPS			
	Pre-Test		Post-Test		Pre-Test		Post-Test	
OPI Scale	M	SD	M	SD	M	SD	M	SD
Thinking Introversion	21.7	8.72	21.6	9.88	21.9	7.58	21.6	8.91
Theoretical Orientation	17.3	6.20	16.9	6.85	17.6	5.45	18.0	5.13
Estheticism	11.5	5.40	12.6	6.27	11.7	4.79	10.5	6.17
Complexity	17.2	6.45	17.1	6.58	17.1	5.55	18.2	7.59
Autonomy	25.9	8.23	26.6	8.75	25.6	6.83	26.7	6.76
Religious Orientation	15.7	2.97	15.2	4.35	14.0	4.87	15.1	4.77
Social Extroversion	24.3	6.95	22.9	6.06	22.2	8.59	21.9	8.28
Impulse Expression	34.9	7.73	37.5	7.40	32.9	8.64	34.4	8.47
Personal Integration	26.2	9.03	25.2	9.43	29.8	11.02	29.2	11.40
Anxiety Level	9.1	4.12	9.3	3.63	10.9	4.14	11.9	5.00
Altruism	19.2	6.19	20.1	6.51	19.4	5.69	18.3	4.87
Practical Outlook	14.8	6.56	15.0	7.94	13.6	5.85	14.2	6.36
Masculinity-Femininity	27.4	6.78	27.6	7.80	29.6	6.59	31.3	5.85
Response Bias	10.2	3.73	8.9	4.54	11.4	2.91	11.2	3.89

NOTE: $N_t = 18$; $N_c = 18$.

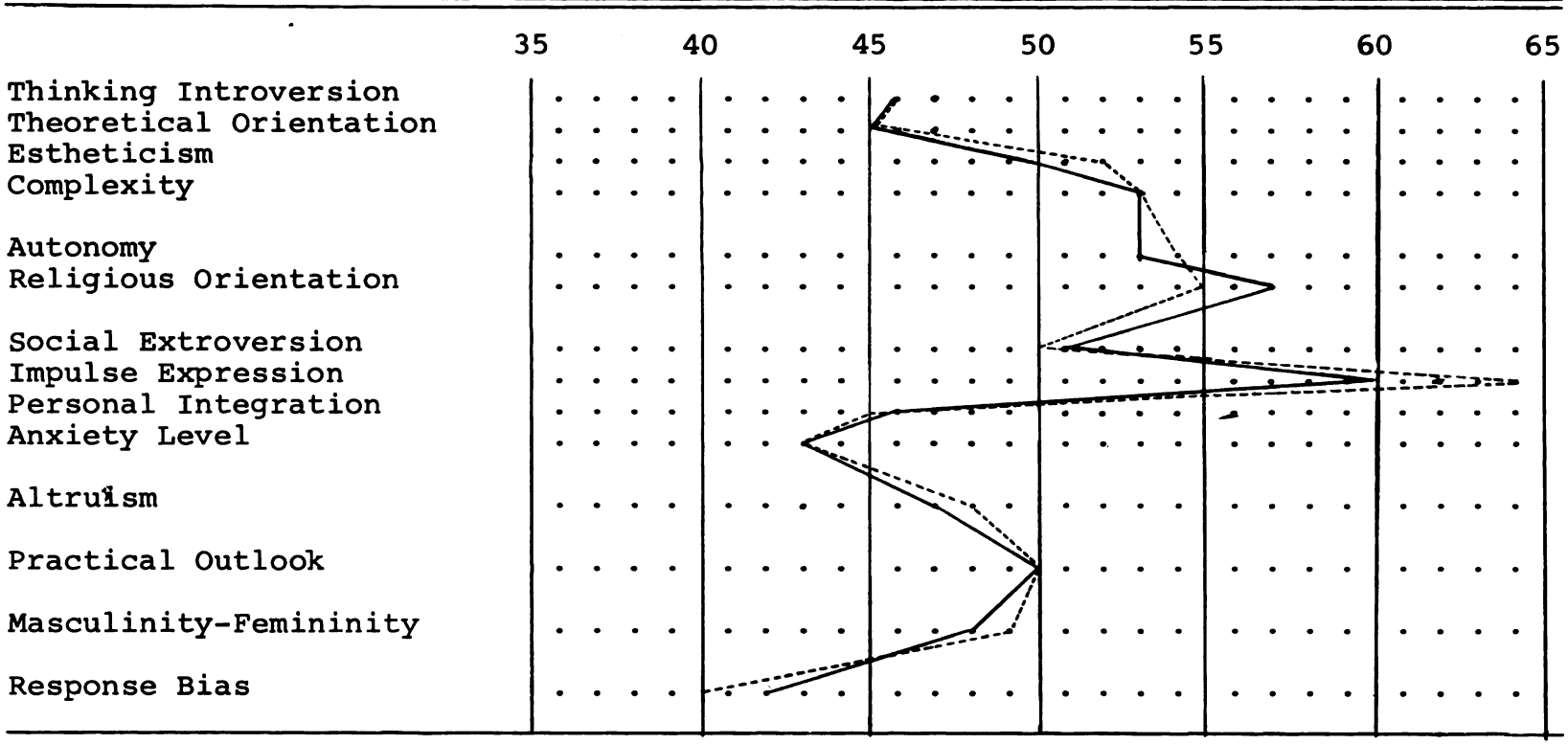

Figure 4-1.--Composite Profile of OPI Mean Standard Scores of Treatment-Group Subjects, Pre-test and Post-test

NOTE: Standard scores are based on OPI norms, on which the mean is 50 and the standard deviation is 10. Solid line denotes mean standard scores of 18 treatment-group subjects on the pre-test. Broken line denotes mean standard scores of 18 treatment-group subjects on the post-test.

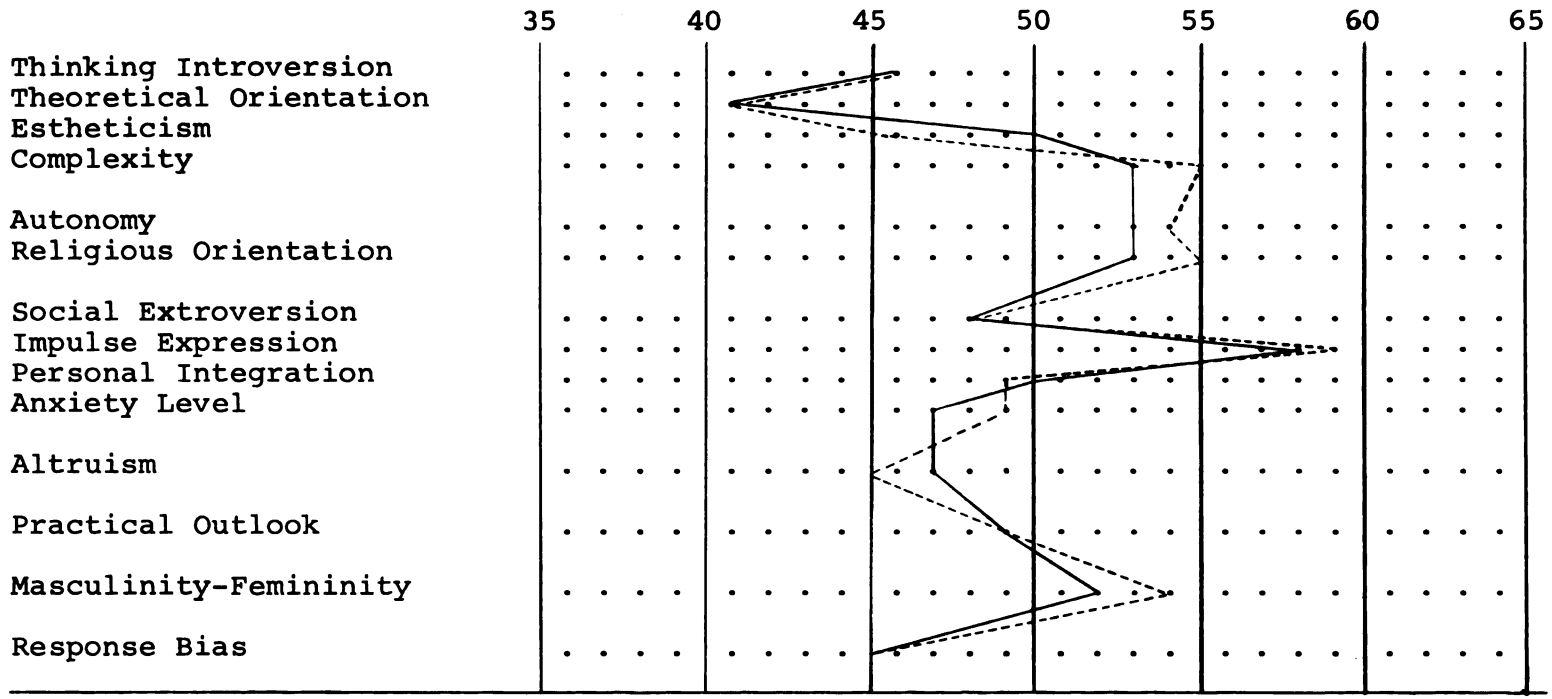

Figure 4-2.--Composite Profile of OPI Mean Standard Scores of Control-Group Subjects, Pre-test and Post-test

NOTE: Standard scores are based on OPI norms, on which the mean is 50 and the standard deviation is 10. Solid line denotes mean standard scores of 18 control-group subjects on the pre-test. Broken line denotes mean standard scores of 18 control-group subjects on the post-test.

A visual comparison of the two profiles, along with a more detailed look at the raw scores for the two groups in Table 4-2, reveals that the pre-test and post-test variations within and across the treatment and control groups are small, especially on the first six scales of the OPI. These scales, measuring intellectual and related nonauthoritarian attitudes, show little change in this, as in other studies (Heist and Yonge, 1968, 2).

The multivariate analysis of variance of gain scores indicates a significant overall F ratio for treatment main effect. The F statistic of 379.1 has a probability of less than 0.04, within the confidence level established for rejecting the null version of Hypothesis 1. Students who participate in the small-group experience change in attitudes and values measured by the OPI more than do their counterparts in the control (non-participant) category.

The results of the multivariate analysis are given in Table 4-3. The multivariate statistic gives a single probability statement applicable to all OPI variables jointly. The univariate F's, also reported in Table 4-3, are the same as would be calculated by separate ANOVA of each OPI variable. The step-down analysis, on the other hand, is a sequence of significance tests of variance. It leads to a univariate test of significance of the second variable (TO) eliminating the first (TI), of the third (Es) eliminating the first and second (TI and TO), and so on down to the last variable (RB) eliminating all previous variates.

Table 4-3.--Multivariate Analysis of Variance of Gain Scores, Treatment Main Effect

Multivariate Test of Equality of Mean Vectors
F-ratio=379.1176 df=14, 1 p less than 0.04

OPI Variable	Mean Sq. Between	Univariate F	p	Stepdown F	p
Thinking Introversion	0.44	0.02	0.89	0.02	0.89
Theoretical Orientation	5.44	0.24	0.63	0.31	0.59
Estheticism	44.44	3.82	0.07	3.59	0.08
Complexity	13.44	1.10	0.31	0.62	0.45
Autonomy	2.25	0.11	0.75	0.36	0.56
Religious Orientation	20.25	1.32	0.27	0.00	0.99
Social Extroversion	10.03	0.42	0.52	0.37	0.56
Impulse Expression	10.03	0.33	0.57	6.49	0.04
Personal Integration	1.00	0.01	0.91	0.48	0.51
Anxiety Level	4.69	0.50	0.49	39.21	0.002
Altruism	38.03	1.14	0.30	0.15	0.72
Practical Outlook	1.36	0.06	0.81	0.23	0.66
Masculinity-Femininity	20.25	0.75	0.40	0.74	0.48
Response Bias	11.11	1.48	0.24	122.60	0.06

NOTE: df for hypothesis = 1; df for error = 14

The multivariate test for equality of variance across all four dominant-type groups (irrespective of treatment and control condition), which is not reported, indicates no significant overall variation. Under this hypothesis of no group differences, the step-down tests of significance, including one for the first variate, are statistically independent (Bock, 1966). Thus, the step-down F ratios reported in Table 4-3 point out which OPI scales uniquely contribute to the overall treatment main effect.

The order in which the variables in a step-down analysis are to be eliminated is determined in advance of the analysis. Unlike the univariate F, the step-down F changes in accord with its position in the list, that is, depending upon the previous variates which have been eliminated. Because no special ranking of OPI variates was made prior to the analysis of the data, the sequence in the step-down analysis is the same as the order in which the OPI variables are listed in the manual and on the score profile.

Two scales contribute significantly to the overall variance between treatment and control subjects with the previous variables eliminated. The scales on which unique variance occurs, beyond that attributable to previous scales, are Impulse Expression and Anxiety Level. Treatment-group subjects increase their mean raw score on Impulse Expression from 34.9 to 37.5; control-group subjects increase their mean raw score on IE from 32.9 to 34.4. The change scores are 2.6 and 1.5,

respectively. Both groups score well above the standardized mean in each instance. (An IE raw score of 26 equals a standard score of 50.) Students who participate in the small-group experience report a greater readiness to express impulses, whether in conscious thought or overt action. Students who do not participate in the group interaction also report an increase in this tendency, but not to the same degree.

The second scale on which there is a significant step-down F ratio is Anxiety Level. Freshmen who participate in the small-group experience show a small increase in mean score (9.1 to 9.3) and a decrease in standard deviation (4.12 to 3.63) from pre-test to post-test. For subjects in the control groups, mean scores show a greater increase (10.9 to 11.9) and standard deviation increases as well (4.14 to 5.00).

On the AL scale, a high score indicates a low feeling of anxiety, and vice versa. High scorers express relatively few feelings or symptoms of anxiety, nervousness, and worry. Low scorers describe themselves as tense and high-strung. Participants in the group sessions express relatively little change in anxiety level (both pre-test and post-test raw scores are roughly equivalent to a standard score of 43). Nonparticipants in the group project report less anxiety on the post-test (i.e. a higher score, approaching a standard score of 49). Students who participate in the small-group sessions do not report a reduction in anxiety; they tend to remain at the same level of anxiety.

The significant results on these two OPI scales, Impulse Expression and Anxiety Level, are consistent with previous research and experience in group development. A degree of difference among group members, in this case a difference in preferred auxiliary function according to the Myers-Briggs typology, and the focus on appreciating and developing new behaviors can cause some anxiety in group members. However, as the discussion in Chapter II on relative amounts of security and stimulation points out, a certain degree of anxiety is a necessary element in change. Another factor which might produce a maintenance, if not an increase, in anxiety level is the relatively short duration of the group experience. Six weeks might not allow sufficient time for all group members to become comfortable with the process.

Impulse Expression, on the other hand, increases to a greater extent among group participants than among non-participants. Both treatment and control groups show an increase in this characteristic. This is consistent with previous research, in which impulse expression is one of the personality variables in which the greatest changes are produced in college (Chickering, 1969; Sanford, 1966).

Hypothesis 2: Small groups formed according to complementarity of personality type, with similar dominant and dissimilar auxiliary functions present in each group, differ from one

another in their patterns of change in attitudes and values as a result of the group experience.

Mean change scores of the four dominant-type groups in both treatment and control conditions are given in Table 4-4. (Pre-test and post-test mean raw scores of the four dominant-type groups on the fourteen OPI scales are listed in Appendix D.) Hypothesis 2 requires a multivariate test of treatment x group interaction in order to assess whether one or more of the dominant-type groups (sensers, intuitives, thinkers, and feelers) exhibit a unique aspect or direction of change.

The multivariate statistic for treatment x group interaction, shown in Table 4-5, gives an F ratio of 31.4, which is significant well below the required .05 level. Hypothesis 2 is supported by the data which show differential effects related to dominant-group and treatment-control interaction. The two OPI scales which are significant in the analysis of treatment main effects (Impulse Expression and Anxiety Level) also have significant step-down F's (as well as significant univariate F's) in this multivariate analysis. Two other scales reveal significant interaction effects, Practical Outlook and Response Bias.

Thus, the evidence indicates that, although scores on Impulse Expression and Anxiety Level are significantly different between subjects who participate in the group

Table 4-4.--Mean OPI Gain Scores of Treatment and Control Groups from Pre-test to Post-test

		Treatment		Control	
OPI Scale	Group	M	SD	M	SD
Thinking Introversion	S	-0.58	3.31	-3.14	4.81
	N	0.75	1.89	2.25	2.87
	T	0.00	8.89	0.00	1.73
	F	0.00	3.74	2.00	1.41
Thinking Orientation	S	0.58	5.09	-0.14	3.58
	N	-2.75	2.22	-1.00	4.55
	T	-1.34	2.08	4.34	5.03
	F	1.00	1.63	-0.25	4.99
Estheticism	S	1.42	2.89	-2.28	3.73
	N	2.00	2.58	-2.25	4.99
	T	-1.66	2.52	-1.33	1.53
	F	1.50	2.08	2.00	3.74
Complexity	S	0.28	4.11	0.14	2.27
	N	1.25	3.30	1.25	0.96
	T	-3.33	3.51	0.33	4.04
	F	0.25	2.75	3.25	6.40
Autonomy	S	-1.28	3.68	1.71	6.16
	N	2.50	3.51	-0.25	2.63
	T	1.34	4.51	-0.33	4.51
	F	1.75	2.50	2.75	1.71
Religious Orientation	S	-0.28	3.20	2.43	4.04
	N	-0.25	2.63	-1.75	2.36
	T	-2.34	2.08	0.00	3.00
	F	0.50	5.00	2.25	1.26
Social Extroversion	S	-2.57	6.13	-1.71	4.23
	N	0.00	5.10	-0.25	2.06
	T	-1.34	2.52	2.67	2.31
	F	-0.75	4.65	-0.25	7.80

Table 4-4.--Continued.

OPI Scale	Group	Treatment M	Treatment SD	Control M	Control SD
Impulse Expression	S	3.71	6.10	2.15	6.20
	N	4.50	4.93	-4.00	3.37
	T	4.67	2.52	0.00	5.00
	F	-3.00	2.71	7.00	4.08
Personal Integration	S	-2.15	6.69	-3.57	11.00
	N	1.25	5.50	5.50	5.45
	T	-3.67	6.03	-1.33	4.04
	F	0.75	5.44	-1.25	5.56
Anxiety Level	S	-0.15	2.04	0.00	3.51
	N	0.00	1.41	3.50	1.29
	T	-2.00	1.00	3.66	0.58
	F	3.00	2.83	-1.75	4.35
Altruism	S	0.15	4.38	-4.00	6.16
	N	4.00	3.92	4.50	3.51
	T	-3.00	3.61	-0.33	2.89
	F	2.00	4.24	-2.50	6.95
Practical Outlook	S	1.85	3.48	1.29	5.41
	N	-3.50	4.51	0.75	2.22
	T	3.34	1.53	0.00	5.00
	F	-1.25	3.77	-0.25	2.06
Masculinity-Femininity	S	-0.72	4.75	3.43	4.24
	N	-3.25	3.40	3.25	7.37
	T	1.00	7.94	1.00	3.61
	F	4.50	2.38	-2.50	5.00
Response Bias	S	-0.57	2.88	-2.29	2.75
	N	-3.50	1.00	3.25	3.77
	T	-2.67	2.08	1.33	1.53
	F	0.75	2.75	-1.00	2.94

Table 4.5.--Multivariate Analysis of Variance of Gain Scores, Treatment x Group Interaction

Multivariate Test of Equality of Mean Vectors

F-ratio=31.4299 df=42, 3.73 p less than 0.003

OPI Variable	Mean Sq. Between	Univariate F	p	Stepdown F	p
Thinking Introversion	11.73	0.52	0.68	0.52	0.68
Theoretical Orientation	17.92	0.78	0.52	0.82	0.51
Estheticism	13.54	1.16	0.36	0.91	0.46
Complexity	8.26	0.67	0.58	0.54	0.66
Autonomy	16.85	0.79	0.52	0.86	0.49
Religious Orientation	8.11	0.53	0.67	1.03	0.43
Social Extroversion	5.72	0.24	0.87	0.25	0.86
Impulse Expression	125.26	4.13	0.03	5.25	0.03
Personal Integration	19.48	0.26	0.85	0.35	0.79
Anxiety Level	37.72	4.04	0.03	79.20	0.0002
Altruism	24.57	0.73	0.55	0.23	0.87
Practical Outlook	18.19	0.79	0.52	12.53	0.03
Masculinity-Femininity	74.11	2.75	0.08	0.88	0.57
Response Bias	40.14	5.33	0.01	519.16	0.03

NOTE: df for hypothesis = 3; df for error = 14

sessions and those who do not, there are further differences among the four dominant-type groups with respect to these same scales.

In addition, although there are no treatment main effects uniquely discerned on Practical Outlook and Response Bias, there are significant effects on these two scales as far as individual dominant-type group performance is concerned. The Practical Outlook scale measures an interest in practical, applied, and utilitarian activities. Response Bias assesses the student's test-taking attitude; as such, it indicates a degree of self-esteem and realism or a tendency to make a good (or at the extreme, a bad) impression. Dominant-type groups differ in the degree and direction of change on these measures in relationship to participation or nonparticipation in the small-group experience.

Hypothesis 3: Dominant-thinker and dominant-feeler groups, in which behavioral development focuses on the auxiliary functions of sensing and intuition, change significantly on OPI scales related to sensing and intuition: Thinking Introversion, Theoretical Orientation, Estheticism, Complexity, Autonomy, Religious Orientation, Impulse Expression, and Practical Outlook.

In one sense, as the multivariate test of Hypothesis 2 indicates, there is an overall significant dominant-group effect across the treatment and control conditions, for all variables on the OPI considered as a whole. However, because Hypothesis 3 specifies certain OPI scales as being of significant interest, they must be dealt with individually, though in relationship to the total effect. The step-down F ratio allows for this, as was mentioned in the discussion of the test for Hypothesis 1.

Of the eight scales mentioned in Hypothesis 3, only two (Impulse Expression and Practical Outlook) have significant step-down F's in the multivariate test of treatment x group interaction. The other six variables are more stable; in fact, these six (TI, TO, Es, Co, Au, and RO) combine to form the Intellectual Disposition Category of the OPI, and are generally found to be fairly stable measures in comparison with other variables on the OPI (Heist and Yonge, 1968).

Two scales not mentioned in Hypothesis 3 also have significant step-down F ratios in the test for treatment x group interaction: Anxiety Level and Response Bias. In order to test for significant differences among the dominant-type groups on these four OPI variables (IE, AL, PO, and RB) the method of Scheffé post-hoc comparisons is used (Hays, 1963). The results of this analysis are given in Table 4-6, along with pre-test and post-test means of the four dominant-type groups on the four significant OPI variables.

Table 4-6. Mean Pre-test and Post-test Raw Scores and Mean Differences on Significant OPI Scales Indicating Significant Post-Hoc Comparisons

OPI Scale & Group	TREATMENT Pre-test Mean	TREATMENT Post-test Mean	TREATMENT Mean Difference	CONTROL Pre-test Mean	CONTROL Post-test Mean	CONTROL Mean Difference
Impulse Expression						
Sensers	30.86	34.57	3.71	34.14	36.29	2.15
*Intuitives	37.00	41.50	4.50	38.75	34.75	-4.00
Thinkers	34.33	39.00	4.67	25.67	25.67	0.00
*Feelers	40.50	37.50	-3.00	30.25	37.25	7.00
Anxiety Level						
Sensers	10.29	10.14	-0.15	11.00	11.00	0.00
**Intuitives	10.50	10.50	0.00	11.00	14.50	3.50
*Thinkers	10.00	8.00	-2.00	11.67	15.33	3.66
*Feelers	4.75	7.75	3.00	10.00	8.25	-1.75
Practical Outlook						
Sensers	17.29	19.14	1.85	15.71	17.00	1.29
**Intuitives	9.25	5.75	-3.50	8.50	9.25	0.75
Thinkers	20.33	23.67	3.34	17.67	17.67	0.00
Feelers	11.75	10.50	-1.25	12.00	11.75	-0.25
Response Bias						
Sensers	8.71	8.14	-0.57	11.86	9.57	-2.29
*Intuitives	12.50	9.00	-3.50	10.00	13.25	3.25
**Thinkers	10.00	7.33	-2.67	11.67	13.00	1.33
Feelers	10.75	11.50	0.75	11.75	10.75	-1.00

NOTE: Number in each treatment and control group: Sensers = 7; Intuitives = 4; Thinkers = 3; Feelers = 4. Total N = 36.

* significant post-hoc comparison for treatment x group interaction at the .05 level, on the basis of both univariate and step-down F's.

** significant post-hoc comparison for treatment x group interaction at the .05 level, on the basis of step-down F only.

Hypothesis 3 predicts certain areas of change in dominant-thinker and dominant-feeler groups. The data in Table 4-6 support only one portion of this hypothesis, however. The two scales of overall significance which are also listed in Hypothesis 3 (Impulse Expression and Practical Outlook) do not show a significant dominant-group effect for thinkers. Dominant feelers, however, do change significantly on the Impulse Expression scale. Feelers who participate in the group experience show a decrease in Impulse Expression (40.5 to 37.5) -- the only dominant group to do so. Feelers who do not participate show a comparatively large increase in IE (30.25 to 37.25). These changes correspond to standard scores of from 67 to 64, for the participant feelers, and from 55 to 63, for the nonparticipant feelers.

Thinkers change significantly on two nonhypothesized scales: Anxiety Level and Response Bias. Feelers also indicate change on the AL scale after the group experience, but in the opposite direction. Thinkers who participate in the group sessions report an increase in Anxiety Level (that is, a decrease in score, from 10.0 to 8.0). Thinkers who are nonparticipants, on the other hand, indicate a lower level of anxiety on the post-test (by a higher score, from 11.67 to 15.33). Of the four dominant groups, the thinkers have the highest reported increase in feelings or symptoms of anxiety after the group experience.

On the same AL variable, feelers indicate an opposite reaction. Participants among the feelers experience decreased anxiety after the group experience (from 4.75 to 7.75); non-participants report an increase in anxiety-related symptoms and feelings (from 10.00 to 8.25). In score patterns, the thinkers become more divergent; the feelers, more convergent. The initial low AL score of the participant feelers (4.75) is equivalent to a standard score of 36, almost one and a half standard deviations below the mean of the normative sample -- a relatively high degree of anxiety, in other words. The direction of change in AL among the dominant-feeler groups may be more attributable to regression effects than the opposite tendency of the dominant-thinker groups to diverge from the mean.

The dominant-thinker group which participates in the series of group development experiences reports a decrease on the Response Bias variable of the OPI (from 10.00 to 7.33). The nonparticipant thinkers show an increase on RB (from 11.67 to 13.00). Again, as in the AL changes, the two dominant-thinker groups change in opposite directions in a divergent pattern. The post-test score of the participant thinkers is approximately 36 in the standard score range of the OPI normative sample. This low score may indicate a low state of well-being or a realistic, frank appraisal of self, depending upon the circumstances. The score is definitely at the opposite end from one which indicates a desire to make a good

impression. One possible interpretation, then, is that the small-group experience contributes to a more realistic attitude toward the self on the part of the dominant thinkers.

In summary, Hypothesis 3 is partially supported. The dominant thinkers who participate in small-group experiences report an increase in feelings of anxiety (a lower AL score) and a decrease in tendencies to make a good impression (a lower RB score). Dominant feelers report, after the group experience, a decrease in readiness to express impulses (a lower IE score) and a decrease in feelings or symptoms of anxiety (a higher AL score).

Hypothesis 4: Dominant-senser and dominant-intuitive groups, in which behavioral development focuses on the auxiliary functions of thinking and feeling, change significantly on OPI scales related to thinking and feeling: Thinking Orientation, Personal Integration, Anxiety Level, Masculinity-Femininity, and Response Bias.

Of the five scales mentioned in Hypothesis 4, two have significant step-down F ratios in the multivariate test of treatment x group interaction, namely, Anxiety Level and Response Bias. Two other OPI variables (Impulse Expression and Practical Outlook) also have significant F ratios in the same analysis (Table 4-6). On all four of these variables it is the dominant-intuitive group which shows significant variation in raw scores. The dominant-senser group, in fact, is

the only one of the four dominant-type groups to show no significant effects on any OPI variables. The conclusion with respect to sensers, then, is that they are the most stable of the dominant types -- a summary judgment that is in accord with the realistic, factual orientation ascribed to the sensing type.

Dominant intuitives, on the other hand, show significant change on all four of the OPI scales in Table 4-6, the only dominant-type group to do so. Concerning two variables included in Hypothesis 4 (Anxiety Level and Response Bias), participants among the intuitives show no mean change in AL, whereas the nonparticipants report fewer feelings and symptoms of anxiety on the post-test (by an increase in AL score, 11.67 to 15.33). It would seem that nonparticipants decrease in anxiety, while small-group participants of similar type maintain their previous level of anxiety. In this case, stability in a certain behavior is a significant effect in comparison with change that occurs under other conditions (or in the absence of certain conditions).

With respect to the second hypothesized OPI scale, Response Bias, the dominant intuitives, like the thinkers, show a decreased tendency to make a good impression (by a lower RB score, 12.50 to 9.00). Nonparticipant intuitives report an increased tendency to make a favorable impression (by an increase in RB score, 10.00 to 13.25). The level of self-regard among the intuitives is not as low as it is among the thinkers.

Intuitives who participate in the small-group experience also show significant change on two other OPI scales (Impulse Expression and Practical Outlook). Intuitive participants in the group sessions report an increase in IE (37.00 to 41.50), in contrast with the reported decrease in the feelers. Nonparticipants among the intuitive types report a decrease in Impulse Expression (38.75 to 34.75). All of these raw scores are well above the mean standard score of 50; in fact, they are at or beyond one standard deviation above the mean of the normative sample. (The IE mean raw score for the Saint Mary's male freshman population [33.4] represents a standard score of 58.) The group experience seems to encourage increased expression of impulses among the intuitives.

Intuitives, who score lower on Practical Outlook than do any of the other dominant types, decrease further on this scale after participation in group experiences. The intuitive group mean on PO decreases for participants (9.25 to 5.75) and increases, to a lesser extent, for nonparticipants (8.50 to 9.25). These raw scores correspond to a standard score change from 41 to 36, approximately, for participant intuitives and from 39 to 41 for nonparticipants. The intuitives' tendency to have a low regard for practical and concrete concerns seems to be reinforced by participation in a small group of like-minded types.

In summary, Hypothesis 4 is partially supported by the data. Dominant sensers do not change on any of the scales. This does, in fact, support the differential-change hypothesis, in that sensers show more stability in the attitudes and interests measured by the OPI than do the other types. Intuitives change on all four significant scales, however. Dominant intuitives who participate in the small-group project report an increase in tendencies to express impulses (an increase in IE score), do not indicate any change in Anxiety Level (while nonparticipants decrease in anxiety responses), decrease measurably in concern for concrete and utilitarian matters (a decrease in PO score), and report less of a tendency to make a good impression (a decrease in RB score).

Another way of summarizing the specific treatment x group interaction effects is to review the changes under each of the significant OPI variables.

Impulse Expression: Sensers and thinkers do not reach significance on their change scores. Intuitives report an increase and feelers report a decrease in tendencies to express impulses. The effects are just the opposite for intuitives and feelers who do not participate in the group sessions.

Anxiety Level: Sensers reach no significant changes uniquely related to their group. Intuitives who participate in the small-group project maintain the same level of

anxiety, whereas the nonparticipate intuitives express a decrease in anxiety level. Thinkers indicate a higher level of anxiety after their group experience, but feelers show a decreased awareness of anxiety and worry after participation in their group experience.

Practical Outlook: Sensers, thinkers, and feelers show no significant differences on this post-hoc comparison. The participant intuitives indicate a decreased concern for practical and utilitarian matters after their experience in the group.

Response Bias: Sensers do not change, nor do the feelers. Both intuitives and thinkers who participate in groups report a decrease in tendency to make a good impression by their responses.

Summary

Second-semester freshmen who participate in a six-week series of small-group sessions, assigned to groups according to the four dominant types on the Myers-Briggs Type Indicator, complete the Omnibus Personality Inventory after the group experience. A multivariate analysis of variance of gain scores is used to test four hypotheses of interest.

Hypothesis 1: Second-semester college freshmen who participate in a small-group experience structured according to behavioral preferences and focused on behavioral development undergo greater

change in attitudes and values than do nonparticipants.

Supported. A multivariate test of overall significance (at the .05 level) of gain scores on the fourteen scales of the Omnibus Personality Inventory (Form F) indicates a significant treatment main effect.

The Impulse Expression and Anxiety Level scales of the OPI have significant step-down F ratios at the .05 level, indicating that these two scales contribute a unique effect to the overall variance.

Participants in the group project report a larger increase in Impulse Expression behavior than do nonparticipants. On the Anxiety Level scale, participants remain at the same level of expressed feelings of anxiety and worry, whereas nonparticipants report a decrease in anxious behavior.

Hypothesis 2: Small groups formed according to complementarity of personality type, with similar dominant and dissimilar auxiliary functions present in each group, differ from one another in their patterns of change in attitudes and values as a result of the group experience.

Supported. A multivariate test of overall significance (at the .05 level) of gain scores on the fourteen scales of the Omnibus Personality Inventory (Form F) indicates a significant treatment x group interaction.

The Impulse Expression, Anxiety Level, Practical Outlook, and Response Bias scales of the OPI have significant step-down F ratios at the .05 level, indicating that these four scales contribute unique effects to the overall variance. Post-hoc comparisons among dominant groups on these scales are used to test Hypotheses 3 and 4.

Hypothesis 3: Dominant-thinker and dominant-feeler groups, in which behavioral development focuses on the auxiliary functions of sensing and intuition, change significantly on OPI scales related to sensing and intuition: Thinking Introversion, Theoretical Orientation, Estheticism, Complexity, Autonomy, Religious Orientation, Impulse Expression, and Practical Outlook.

Partially Supported. The first six of these scales (those which also comprise the Intellectual Disposition Category of the OPI) show no significant changes across groups and treatment. The remaining two scales (Impulse Expression and Practical Outlook), plus two others (Anxiety Level and Response Bias), are examined with post-hoc comparisons to indicate specific group x treatment effects.

The dominant thinkers who participate in the small-group experience report an increase in feelings and symptoms of anxiety (a lower Anxiety Level score) and a decrease in tendencies to make a good impression by their responses (a lower Response Bias score). After their group experience,

dominant feelers, compared with their nonparticipant counterparts, report a decrease in readiness to express impulses (a lower Impulse Expression score) and a decrease in feelings and symptoms of anxiety (a higher Anxiety Level score).

Hypothesis 4: Dominant-senser and dominant-intuitive groups, in which behavioral development focuses on the auxiliary functions of thinking and feeling, change significantly on OPI scales related to thinking and feeling: Thinking Orientation, Personal Integration, Anxiety Level, Masculinity-Femininity, and Response Bias.

Partially Supported. Three of these OPI scales (Thinking Orientation, Personal Integration, and Masculinity-Femininity) show no significant changes across groups and treatment. The remaining two scales (Anxiety Level and Response Bias), plus two others (Impulse Expression and Practical Outlook), are examined with post-hoc comparisons to indicate specific group x treatment effects.

Dominant sensers do not show significant change on any of these four OPI scales. Dominant intuitives, conversely, show significant change on all four scales. Intuitives who participate in the group experience report an increase in readiness to express impulses (a higher Impulse Expression score); do not indicate any change in feelings and symptoms of anxiety (no change in Anxiety Level score), whereas nonparticipant intuitives decrease in anxiety feelings; decrease

measurably in concern for concrete and utilitarian matters (a lower Practical Outlook score), and report less of a tendency to make a good impression (a lower Response Bias score).

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Higher education is experiencing intense controversy at the very time of its ascendancy as one of the central institutions of American society. Persons in all segments of the society question the means and ends espoused by traditional colleges and universities. Meanwhile, behavioral scientists are applying the knowledge of human behavior gained in the past in an effort to solve the complex problems that beset modern man in search of an education.

An approach to human development which is receiving considerable attention and support insists that man is an active, self-actualizing being with a wide choice of behaviors available to him in his developmental path to maturity. The full development of the individual is increasingly becoming the expressed goal of many groups and organizations, but the working out of that goal in actual practice turns out to be much more elusive.

Studies of college student development indicate that significant changes occur in students as a result of varying periods of attendance in collegiate environments. Special effects are sometimes observed in relatively powerful settings,

but even in those cases students may change in different patterns and directions. A survey of research on the effects of these different educational environments shows that most of the studies are descriptive, with little or no attention given to setting up conditions that support desired changes in behavior (Walz and Miller, 1969).

There are few studies in which the social environment of persons is systematically manipulated in order to facilitate their behavioral development. The contradictions in the research on group atmosphere and its effects are due in part to this failure to specify the personality characteristics of the group members (Golembiewski, 1962). Similarly, no studies are found in which the composition of behavioral development groups is deliberately and systematically treated as a variable worthy of primary investigation (Anderson, 1969).

Studies of human development and of the effects of group interaction on individual behavior suggest that participation in small-group experiences will have an effect on student behavioral development. Furthermore, both the theory of personality type, particularly that developed by Jung, and the variation in behavior which exists among individuals indicate that behavioral change will not be identical for all types of persons, even if they experience similar situations.

The facts that human behavioral development continues to occur throughout the college years, that behavioral development is differential among types of persons, that the group is an essential condition for human development, and that the composition of the group significantly affects the behavioral development of its members -- all suggest that planned, small-group interaction designed to bring together persons of similar personality type can influence behavioral development. What is more, a combination of similarity and dissimilarity of preferred behaviors satisfies the condition that an appropriate balance of security and stimulation is required for healthy development of the organism.

The small-group project implemented and tested in this study is an attempt to demonstrate one approach to student development that is applicable in any undergraduate setting. Second-semester freshmen in a small, church-related, liberal arts college volunteer to participate in a six-week series of small-group meetings. Each of the four treatment groups is composed of students of one dominant type (sensing, intuition, thinking, or feeling), as measured by the Myers-Briggs Type Indicator. Group facilitators, who also share the preferred type, are senior resident assistants previously trained by the experimenter.

At the conclusion of the small-group experience, which focuses on understanding and developing behaviors related to the four dominant and auxiliary functions described

by Jung, group members and their randomly assigned type-mates in control (standby) status complete the Omnibus Personality Inventory. Multivariate analysis of variance of pre-test and post-test OPI gain scores is used to test for significant treatment main effect and treatment x group interaction.

The main hypothesis, that participation in a small-group experience results in overall behavioral change, as measured by the OPI, is supported by the data. Two OPI scales, Impulse Expression and Anxiety Level, are significant within the overall effect of change on all fourteen OPI dimensions. Participants report a larger increase in Impulse Expression than do nonparticipants. Although participants do not change on the Anxiety Level scale, their stability is significant in comparison with the nonparticipants, whose expressed feelings of anxiety and worry decrease.

These results are consistent with other research which indicates that Impulse Expression is one of the areas in which the greatest changes occur in the college years (Chickering, 1969; Sanford, 1966). In this, as in other hypotheses tested in this study, the intellectual scales on the OPI indicate relative stability, which is consistent with predicted results (Heist and Yonge, 1968).

Along with these two behavioral scales (Impulse Expression and Anxiety Level), the Practical Outlook and Response Bias dimensions show significant change in the test for treatment x group interaction. Other OPI scales on

which change is hypothesized do not, however, show the predicted patterns among the various dominant-type groups.

Differences among the four groups on these scales support the theory of typological variation. On the Impulse Expression dimension, sensers and thinkers do not have significant change scores. Intuitives and feelers who participate in the group sessions report an increase and a decrease, respectively, on this scale. The effect for non-participant intuitives and feelers is just the reverse: intuitives decrease in Impulse Expression, while feelers increase.

These seemingly contradictory results can be explained, perhaps, by describing the focus and composition of each group's interaction. Dominant intuitives focus on behaviors related to their auxiliary functions of thinking and feeling. However, three of the four group members show a preference for extraversion and perception (ENTP and ENFP). These preferences, heightened by group interaction, might explain an increase in Impulse Expression behavior.

Dominant feelers, on the other hand, focus their group interaction on the auxiliary functions of sensing and intuition, perceptual functions whose development might be expected to result in increased expression of impulses. However, in contrast to the dominant-intuitive group, three of the four feelers prefer introversion. The small-group experience may have inhibited Impulse Expression, in line with this preferential attitude toward the inner world.

This explanation does not account for the failure of the sensers (whose group also includes a majority of extraverts and perceivers) to increase on the IE scale. What might be operating here is a basic stability pattern among sensers, for their group shows no change on any of the four OPI scales which show significant effects in the analysis. The factual, reality-oriented perceptual preference of the dominant sensers may account for this pervasive stability.

Unlike the feelers, the dominant thinkers (whose auxiliary functions of sensing and intuition are also the central "topic" of their small-group agenda) do not decrease on IE. The objective, logical approach to reality of thinkers would imply a disinclination to express impulses and feelings. In this study, the thinkers neither decrease nor increase in this behavior.

Three dominant-type groups indicate significant change on the Anxiety Level scale of the OPI; only the sensers show no difference from pre-test to post-test. Intuitives who participate in the group experience have a mean change score of zero, whereas nonparticipant intuitives increase their mean, that is, they decrease in the amount of nervous and anxious behavior reported. For the intuitives, then, the small-group interaction maintains their level of anxiety, a possible sign of the degree of stimulation that takes place in their group.

Thinkers and feelers who participate in small groups report opposite trends on the Anxiety Level scale. Participant thinkers show an increase in anxious behavior; feelers, a decrease. For nonparticipants among these two types, the reverse is true. By definition, dominant thinkers are more comfortable with impersonal, objective analysis than with the personal, subjective value orientation of feelers. Personal interaction in groups may, therefore, heighten the anxiety of thinkers and provide more comfort and security for feelers. Similarly, thinkers not involved in group interaction may be more at ease, while nonparticipant feelers express a need for personal support.

On the Practical Outlook scale, a measure of interest in concrete, applied, and utilitarian concerns, only the dominant intuitive group reflects a significant change as a result of small-group interaction. Their group experience apparently intensifies the intuitive preference, for the participant intuitives show a decrease in Practical Outlook. Nonparticipant intuitives increase slightly in PO. The significant correlation (-.47) between Practical Outlook and Myers-Briggs Sensing-Intuition continuous scores of Saint Mary's College freshmen suggests that intuitives, in whom sensing is the least preferred of the four functions, would score lower on this dimension than would the other three types. Some thinkers and feelers, according to the Jungian typology, have sensing as their auxiliary function, whereas

no intuitives, by definition, have sensing as a supporting function. Group experience, therefore, seems to intensify the intuitive preference, but it does not have any effect on sensing behavior.

The Response Bias scale attempts to assess the student's test-taking attitude. It indicates a positive or negative trend in the manner of an individual's self-report. Dominant sensers and feelers show no change on this scale as a result of group experience. Intuitives and thinkers who participate, however, decrease in Response Bias, while their nonparticipant counterparts increase on this dimension.

One possible interpretation is that group experience contributes to a realistic evaluation of self and results in less tendency to try to make a good impression. In terms of standard score units, the intuitives' mean score on RB changes from approximately 48 to 40 after the group experience. Thinkers who participate in the group change from 42 to 36. The relatively low mean score of the thinkers can be interpreted as indicating either a low state of well-being or an attempt to make a bad impression. One can say that mid-range scores on RB reflect a realistic attitude toward the self, but the point at which "realism" becomes "negativism" is difficult to specify. The difference might be a function of the degree of security and stimulation which an individual finds in his group.

Taken *in toto*, the results of this study confirm previous research which shows that small-group interaction has an effect on participants, but they also suggest differences attributable to behavioral preferences or types. A number of points need to be made, however, to clarify some of the difficulties and limitations of this particular group development project.

In the first place, sample size is small. Because of differences in the number of each type in the freshman class and in the rate of volunteering, it is difficult to obtain adequate representation for all the dominant and auxiliary type combinations. Replication of this study with a larger sample is necessary.

The method of matching and random assignment used in composing the groups requires identical Myers-Briggs indices in each pair (ESFP with ESFP, etc.). A number of volunteers who have no exact duplicate are, therefore, not included in the sample. Matching only on the basis of the four functions (S, N, T, and F) would provide more available pairs, but fails to conform to the hypothesized dominant types (in which the E-I and J-P dimensions also help determine the type classification). Further study is needed to ascertain which approach discriminates behavior more accurately, the dominant-type classification (I*N*F*J*, E*N*F*J*, etc.) or the preference for the two functions (_NF_).

A second major limitation in this research project is the relatively short time span covered by the small-group meetings. Six weeks is time enough for groups to become acquainted and to develop a behavioral style of sorts, but it is not sufficient to encompass the potential range of behavioral insight and practice. A full semester or, better yet, a year's interaction would provide a much better test of the effects of planned small-group interaction on individual behavior.

There is, of course, no end to the list of complications that plague the investigator in his efforts to run a controlled experiment. Even the content of the letter inviting students to participate in a group project is a factor in discriminating volunteers from nonvolunteers (Rose and Elton, 1968).

Various expectancy factors must also be considered as possible confounding variables in any research project which so intensely involves the experimenter and his subjects. Experimenter bias, demand characteristics, Hawthorne, placebo, and halo effects enter the experiment at different phases and contribute errors of different kinds (Gephart and Antonoplos, 1969). The use of senior resident assistants as group facilitators reduces the direct involvement of the investigator in the group interaction.

Another way of looking at the expectancy factor is to use it consciously as a strategy for changing behavior

(Rosenthal and Jacobson, 1968). The suggestion has already been made that incoming freshmen need to be convinced that they can change and that their development has not already ceased (Sanford, 1962; Freedman, 1965).

The experience of working with senior group facilitators is one of the promising outcomes of the project, insofar as its effectiveness in the college program is concerned. There is ample evidence to justify the involvement of senior students in an organized program of behavioral development for freshmen. In fact, at the college where this project has taken place, a group of students has proposed and the faculty have authorized a program of planned interaction among seniors and freshmen for the ensuing academic year.

One might also expect that a group project with second-semester freshmen would show less change than one that involves freshmen in the early part of their first semester. Obtaining significant behavioral change in a second-semester group experiment more strongly supports the effectiveness of the experience in facilitating student development, beyond those effects attributable to early, and perhaps rapid, socialization.

Another uncontrolled factor in the small-group project is attendance at group sessions. Although each of the four dominant-type groups met six times, individual absenteeism, of course, occurred. One study reports no

relationship between number of group meetings and amount of change on OPI variables (Alberti, 1969), but it is difficult to test for variation caused by individual absenteeism. In the present study, five group members missed no meetings and seven were absent one out of the six times. Three freshmen were absent from two meetings; two members missed three meetings each, and one freshman (the only girl in the research sample) missed four group sessions.

The establishment of experimental controls (Sanford, 1966) and the specification of replicable procedures and techniques (Anderson, 1969) are primary needs for research in higher education. This small-group project provides some indication of the kind of behavioral development strategy which can be applied in a variety of college settings with realistic expectations of success. This research also meets the criticism that most current research has emphasized the understanding rather than the transformation of higher education (Martin and Heckman, 1969). It confirms the conclusion one investigator makes with respect to a study of faculty-student groups, rejecting "a haphazard, catch-as-catch-can approach to interaction" in favor of group experiences "which have been purposefully designed to accomplish specific objectives" (Alberti, 1969).

Studies of higher education indicate that changes in affective or non-cognitive areas of personality take place, but are not directly affected by institutional factors and

strategies (Becker et al., 1968; Chickering, 1969). Yet, if behavioral objectives and goals are to be realized, they must be defined precisely, implemented in systematic ways, and evaluated under controlled conditions (Krathwohl et al., 1964). Otherwise, the college cannot claim to have changed its students in ways not already accounted for by the students' own background and characteristics.

Because the group experience is more powerful and permanent when it is embedded in significant organizational life (Gibb and Gibb, 1969), educators should incorporate interpersonal experiences into the college program. The growing interest in identity groups, primary groups, and encounter groups, as they are variously called, indicates that this kind of behavioral strategy is of great potential value, especially during the first year of college (Newcomb, 1967; Burton, 1969; Martin, 1969; Taylor, 1969).

Perhaps a program of total behavioral development, using both individual and group strategies, can help to correct the dismal picture of liberal arts education which a recent American Council on Education study outlines in its opening lines:

> The typical private liberal arts college of the mid-twentieth century is obsolete. Its sovereign isolation, its protected students, the one-track careers of its faculty, its restrictive curriculums and teaching, and its tepid purposes make it unsuited to the needs of the decades ahead. To have a bright future, private colleges must struggle to surmount these defects in a context of significantly altered purposes (Keeton and Hilberry, 1969, 1).

In the face of widespread social and individual change and the threat of obsolescence, educators are still not consciously applying the known optimal conditions for change. These conditions are sufficiently documented in behavioral science research: mild anxiety, support and protection from concerned groups and individuals, heterogeneous or complementary composition, models of alternative behaviors, and interpretation and assessment of ongoing behavior (Whitman, 1964).

The field of higher education, which has alternated from paternalism and authoritarianism to a temptation to abandon all interaction with youth, offers particularly challenging opportunities to members of the student personnel profession. Whether called a facilitator of learning (Rogers, 1968), a systematic promoter of change (Thoresen, 1969), or a behavioral artist (Grant, 1968), the student personnel worker of the future will be a student development specialist concerned with matters more important (and more effective) than "organized benevolence", to use Taylor's phrase (1969, 179).

The idea of total student development is not a new one. A. Lawrence Lowell proclaimed the need in his 1909 inaugural address as president of Harvard:

> The object of the undergraduate department is not to produce hermits, each imprisoned in the cell of his own intellectual pursuits, but men fitted to take their places in the community and live in contact with their fellow man (Brubacher and Rudy, 1958, 322).

The emphasis in the traditional student personnel point of view on individual differences, on treating the student as a functioning totality, and on participation rather than control (Mueller, 1961; Williamson, 1961) has not been effectively translated into practice, if one judges by the amount of unrest and uncertainty among students and professional educators alike.

New approaches suggested by studies of human behavioral development offer means of bringing educational practice into harmony with fundamental human needs. Group processes have much to contribute in this effort to humanize education. Without neglecting individual and organizational levels of development, the college can use small-group strategies to make a unique contribution to human development (Grant, 1968). The small-group behavioral development project described in this study is one such strategy to enhance the flexible, ongoing development of college students and thereby facilitate their daily journey toward self-direction.

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APPENDICES

APPENDIX A

Definitions of the Fourteen Omnibus Personality Inventory Scales

APPENDIX A

Definitions of the Fourteen Omnibus Personality Inventory Scales

1. Thinking Introversion (TI)--43 items: Persons scoring high on this measure are characterized by a liking for reflective thought and academic activities. They express interests in a broad range of ideas found in a variety of areas, such as literature, art, and philosophy. Their thinking is less dominated by immediate conditions and situations, or by commonly accepted ideas, than that of thinking extroverts (low scorers). Most extroverts show a preference for overt action and tend to evalute ideas on the basis of their practical, immediate application, or to entirely reject or avoid dealing with ideas and abstractions.

2. Theoretical Orientation (TO)--33 items: This scale measures an interest in, or orientation to, a more restricted range of ideas than is true of TI. High scorers indicate a preference for dealing with theoretical concerns and

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problems and for using the scientific method in thinking; many are also exhibiting an interest in science and in scientific activities. High scorers are generally logical, analytical, and critical in their approach to problems and situations.

3. Estheticism (Es)--24 items: High scorers endorse statements indicating diverse interests in artistic matters and activities and a high level of sensitivity and response to esthetic stimulation. The content of the statements in this scale extends beyond painting, sculpture, and music, and includes interests in literature and dramatics.

4. Complexity (Co)--32 items: This measure reflects an experimental and flexible orientation rather than a fixed way of viewing and organizing phenomena. High scorers are tolerant of ambiguities and uncertainties; they are fond of novel situations and ideas. Most persons high on this dimension prefer to deal with complexity, as opposed to simplicity, and very high scorers are disposed to seek out and to enjoy diversity and ambiguity.

5. Autonomy (Au)--43 items: The characteristic measured by this scale is composed of liberal, non-authoritarian thinking and a need for independence. High scorers show a tendency to be independent of authority as traditionally imposed through social institutions. They oppose infringements on the rights of individuals and are tolerant of

viewpoints other than their own; they tend to be realistic, intellectually and politically liberal, and much less judgmental than low scorers.

6. Religious Orientation (RO)--26 items: High scorers are skeptical of conventional religious beliefs and practices and tend to reject most of them, especially those that are orthodox or fundamentalistic in nature. Persons scoring around the mean are manifesting a moderate view of religious beliefs and practices; low scorers are manifesting a strong commitment to Judaic-Christian beliefs and tend to be conservative in general and frequently rejecting of other viewpoints. (The direction of scoring on this scale, with religious orientation indicated by low scores, was based chiefly on the correlation between these items and the first four scales, which measure a general intellectual disposition.)

7. Social Extroversion (SE)--40 items: This measure reflects a preferred style of relating to people in a social context. High scorers display a strong interest in being with people, and they seek social activities and gain satisfaction from them. The social introvert (low scorer) tends to withdraw from social contacts and responsibilities.

8. Impulse Expression (IE)--59 items: This scale assesses a general readiness to express impulses and to seek

gratification either in conscious thought or in overt action. High scorers have an active imagination, value sensual reactions and feelings; very high scorers have frequent feelings of rebellion and aggression.

9. Personal Integration (PI)--55 items: The high scorer admits to few attitudes and behaviors that characterize socially alienated or emotionally disturbed persons. Low scorers often intentionally avoid others and experience feelings of hostility and aggression along with feelings of isolation, loneliness, and rejection.

10. Anxiety Level (AL)--20 items: High scorers deny that they have feelings or symptoms of anxiety, and do not admit to being nervous or worried. Low scorers describe themselves as tense and high-strung. They may experience some difficulty in adjusting to their social environment, and they tend to have a poor opinion of themselves. (Note the direction of scoring on this scale: a high score indicates a low anxiety level, and vice versa.)

11. Altruism (Am)--36 items: The high scorer is an affiliative person and trusting and ethical in his relations with others. He has a strong concern for the feelings and welfare of people he meets. Low scorers tend not to consider the feelings and welfare of others and often view people from an impersonal, distant perspective.

12. Practical Outlook (PO)--30 items: The high scorer on this measure is interested in practical, applied activities and tends to value material possessions and concrete accomplishments. The criterion most often used to evaluate ideas and things is one of immediate utility. Authoritarianism, conservatism, and non-intellectual interests are very frequent personality components of persons scoring above the average.

13. Masculinity-Femininity (MF)--56 items: This scale assesses some of the differences in attitudes and interests between college men and women. High scorers (masculine) deny interests in esthetic matters, and they admit to few adjustment problems, feelings of anxiety, or personal inadequacies. They also tend to be somewhat less socially inclined than low scorers and more interested in scientific matters. Low scorers (feminine), besides having stronger esthetic and social inclinations, also admit to greater sensitivity and emotionality.

14. Response Bias (RB)--28 items: This measure, composed chiefly of items seemingly unrelated to the concept, represents an approach to assessing the student's test-taking attitude. High scorers are responding in a manner similar to a group of students who were explicitly asked to make a good impression by their responses to these items. Low scorers, on the contrary, may be

trying to make a bad impression or are indicating a low state of well-being or feelings of depression.

APPENDIX B

Letters Used in Communicating With Freshmen and With Group Facilitators

LETTER ADDRESSED TO

RECOMMENDED SENIOR RESIDENT ASSISTANTS

December 8, 1969

Dear _____:

This letter arrives at a busy time, so I will try to be brief. I would like to explore with you the possibility of your being a small-group leader (facilitator) in a student development project on campus during the second semester.

All freshmen are receiving invitations to participate in a six-week series of small-group sessions. Although at this time I cannot predict how many groups there will be (that depends on the response from the freshmen), I do want to find out at this point whether you are interested in participating in the experience as facilitator for one of these groups.

The demands on your time early in the second semester would be as follows. All group facilitators meet with me several times during the first week of the second semester, beginning January 12, in order to develop understanding of the group project and learn specific skills and behaviors to be applied in the group setting. From the second through the seventh week of the semester (until mid-March), each group facilitator meets once a week with his group and then with me or with other facilitators to review the experience. After the first week's training sessions, there is less extensive a time commitment involved and greater flexibility in planning the individual group's meeting time.

Right now I am simply asking whether you would like to participate. If you can devote the necessary time to this project and are interested in this type of experience, please address a note to that effect to me at Saint Mary's via campus mail. I will be there sometime during the Christmas holidays and will remain through the first half of the second semester. If you accept this invitation to be considered as a prospect for group facilitator, I will either correspond

with you during the holidays or let you know of further developments immediately upon your return to the campus after the holidays.

If you have any particular questions or observations, please communicate them to me and I will be happy to discuss them with you when we have the opportunity to do so.

Enjoy your well-deserved vacation and have a Merry Christmas and a most successful New Year!

Sincerely,

Paul Grass, FSC

FIRST LETTER OF INVITATION

ADDRESSED TO ALL FRESHMEN

December, 1969

Dear Student:

How are you? -- that's the way many letters begin.

Who are you? -- is a different question entirely.

Many American college students list "the search for self through relationships with others" as one of their primary concerns. At the same time, student development projects at universities such as California (Berkeley) and Michigan State show that one of the essential conditions for growth in self-awareness is the group.

You, as well as all the members of the freshman class, are invited to participate in a group-centered experience at Saint Mary's College during the second semester. The purpose of the group is to help its members grow in self-awareness, in understanding of others, and in development of interpersonal competence.

Shortly after you return to campus in January, a series of small-group sessions will begin, continuing on a once-a-week basis for about six weeks. Each group will determine its own meeting time in order not to conflict with other activities of its members.

If you want to participate in a group, please put your name on the enclosed card and return it through campus mail. I will be on campus in January to answer any questions you may have. Students at Michigan State University have found this kind of group experience to be positive and helpful. I believe that you, too, will find it worthwhile.

Sincerely,

Paul Grass, FSC

SECOND LETTER OF INVITATION

ADDRESSED TO ALL FRESHMEN

January 13, 1970

Dear Student:

Shortly before the Christmas holidays you received an invitation to participate in a small-group student development project on campus during this second semester.

A number of your classmates have already indicated their interest in participating in this learning experience. There is still time during the remainder of this week for you to join one of the groups if you wish. The senior resident assistants who are group facilitators will begin meeting with their groups at a mutually acceptable time beginning next week. The groups will meet once a week until early in March.

If you would like to join this program of self-understanding and personal development, either send the enclosed card or call me at extension 225 between 8:30 a.m. and 4:30 p.m. For the next few weeks I will be using the small office in Heffron Hall (Room 105) just inside the main door. I can also be reached at the Brothers' House, extension 253.

If you want further information before deciding whether or not to participate, don't hesitate to contact me at a time convenient for yourself.

Once again, thank you for your attention and interest. Best wishes for a successful semester.

Sincerely,

Paul Grass, FSC

LETTER ADDRESSED TO FRESHMEN IN TREATMENT GROUPS

January 24, 1970

Dear _____:

Thank you once again for volunteering to participate in the student development group project. Nearly 60 freshmen have agreed to join in the series of small-group sessions.

Two sets of groups have been formed, with members chosen randomly from among the volunteers who share certain behavioral preferences. Your group will begin meeting this week. Several other groups will have their first meeting later in the semester, probably in early March.

The senior resident assistant who is the facilitator of your group is _____.

His campus address: _____

His post office box: _____

His phone: _____

Your group will have its first meeting

on _____

at _____

in _____

Your contribution to the group is significant and your presence will help make the group a meaningful experience.

I also want you to know how much I appreciate your interest and involvement in the project.

Sincerely,

Paul Grass, FSC

LETTER ADDRESSED TO FRESHMEN

IN CONTROL (STANDBY) GROUPS

January 24, 1970

Dear _____:

Thank you once again for volunteering to participate in the student development group project. Nearly 60 freshmen have agreed to join in the series of small-group sessions.

Two sets of groups have been formed, with members chosen randomly from among the volunteers who share certain preferred behaviors. The first set of groups (five in number) will begin meeting this week. Your group will be in the second set and will have its first session later in the semester, probably in early March.

The available number of senior resident assistants/facilitators and the number of volunteers are among the factors which have caused us to divide the groups into two sets. You will be informed when the second set of groups is to begin meeting.

I also want you to know how much I appreciate your interest and involvement in this project.

Sincerely,

Paul Grass, FSC

APPENDIX C

Correlations Between Omnibus Personality Inventory and Myers-Briggs Type Indicator Scores

APPENDIX C

Table C-1.--Correlations Between Omnibus Personality Inventory and Myers-Briggs Type Indicator Scores

OPI	Extraversion-Introversion		Sensing-Intuition		Thinking-Feeling		Judgment-Perception	
	M	F	M	F	M	F	M	F
TI	.13	-.11	.50	.63	-.16	-.18	.11	.18
TO	.05	.03	.49	.43	-.20	-.23	.09	.00
Es	.21	-.08	.39	.49	-.10	-.14	.12	.20
Co	.06	.08	.47	.63	-.11	-.22	.47	.44
Au	.03	.05	.51	.51	-.17	-.31	.39	.36
RO	.00	.25	.29	.00	-.14	-.45	.23	.23
SE	-.78	-.72	-.06	.10	.10	.16	-.08	-.06
IE	-.21	-.01	.19	.43	-.01	-.14	.29	.49
PI	-.53	-.37	-.02	-.19	-.01	.10	-.09	-.28
AL	-.54	-.32	-.06	-.09	.07	-.02	-.12	-.12
Am	-.39	-.48	.05	.18	.17	.25	-.14	-.24
PO	-.06	.05	-.59	-.60	.09	.18	-.39	-.22
MF	-.17	.19	-.11	-.24	-.07	-.19	-.07	-.08
RB	-.20	-.37	.19	.06	-.09	.02	-.17	-.36

Note - (a) For males, r of .26 is required for significance at .01 level; for females, r of .27 is necessary. (b) N = 100 male and 94 female college freshmen. (c) The correlations between IE and the other variables in the table are based on a version of IE which contained five more items than the present scale (Form F). (d) Signs of the correlations with Thinking-Feeling have been reversed from those in the OPI Manual in order to conform to the convention followed throughout this dissertation: the positive pole is in the direction of Introversion, Intuition, Feeling, and Perception, respectively.

APPENDIX D

Mean OPI Pre-test and Post-test Raw Scores and Mean Differences of Treatment and Control Groups in the Research Sample

APPENDIX D

Table D-1.--Mean OPI Pre-test and Post-test Raw Scores and Mean Differences of Treatment and Control Groups in the Research Sample

OPI Scale / Group	TREATMENT Pre-test Mean	TREATMENT Post-test Mean	TREATMENT Mean Difference	CONTROL Pre-test Mean	CONTROL Post-test Mean	CONTROL Mean Difference
Thinking Introversion						
Sensers	14.29	13.71	-0.58	18.57	15.43	-3.14
Intuitives	31.50	32.25	0.75	26.50	28.75	2.25
Thinkers	17.00	17.00	0.00	22.67	22.67	0.00
Feelers	28.25	28.25	0.00	22.50	24.50	2.00
Thinking Orientation						
Sensers	12.71	13.29	0.58	15.14	15.00	-0.14
Intuitives	21.50	18.75	-2.75	22.50	21.50	-1.00
Thinkers	14.67	13.33	-1.34	14.33	18.67	4.34
Feelers	23.25	24.25	1.00	19.50	19.25	-0.25
Estheticism						
Sensers	8.29	9.71	1.42	9.71	7.43	-2.28
Intuitives	15.75	17.75	2.00	15.25	13.00	-2.25
Thinkers	9.33	7.67	-1.66	12.33	11.00	-1.33
Feelers	14.50	16.00	1.50	11.00	13.00	2.00
Complexity						
Sensers	12.29	12.57	0.28	15.29	15.43	0.14
Intuitives	22.50	23.75	1.25	20.75	22.00	1.25
Thinkers	15.33	12.00	-3.33	13.00	13.33	0.33
Feelers	21.75	22.00	0.25	19.50	22.75	3.25

Table D-1.--Continued.

OPI Scale / Group	TREATMENT Pre-test Mean	TREATMENT Post-test Mean	TREATMENT Mean Difference	CONTROL Pre-test Mean	CONTROL Post-test Mean	CONTROL Mean Difference
Autonomy						
Sensers	26.57	25.29	-1.28	22.29	24.00	1.71
Intuitives	32.50	35.00	2.50	33.75	33.50	-0.25
Thinkers	15.33	16.67	1.34	21.33	21.00	-0.33
Feelers	26.25	28.00	1.75	26.25	29.00	2.75
Religious Orientation						
Sensers	16.71	16.43	-0.28	13.00	15.43	2.43
Intuitives	16.00	15.75	-0.25	16.75	15.00	-1.75
Thinkers	13.67	11.33	-2.34	11.67	11.67	0.00
Feelers	15.00	15.50	0.50	14.75	17.00	2.25
Social Extroversion						
Sensers	22.71	20.14	-2.57	25.14	23.43	-1.71
Intuitives	23.75	23.75	0.00	21.50	21.25	-0.25
Thinkers	29.67	28.33	-1.34	25.33	28.00	2.67
Feelers	23.75	23.00	-0.75	15.50	15.25	-0.25
Impulse Expression						
Sensers	30.86	34.57	3.71	34.14	36.29	2.15
Intuitives	37.00	41.50	4.50	38.75	34.75	-4.00
Thinkers	34.33	39.00	4.67	25.67	25.67	0.00
Feelers	40.50	37.50	-3.00	30.25	37.25	7.00
Personal Integration						
Sensers	29.29	27.14	-2.15	33.14	29.57	-3.57
Intuitives	26.00	27.25	1.25	23.50	29.00	5.50
Thinkers	25.67	22.00	-3.67	36.00	34.67	-1.33
Feelers	21.25	22.00	0.75	25.75	24.50	-1.25
Anxiety Level						
Sensers	10.29	10.14	-0.15	11.00	11.00	0.00
Intuitives	10.50	10.50	0.00	11.00	14.50	3.50
Thinkers	10.00	8.00	-2.00	11.67	15.33	3.66
Feelers	4.75	7.75	3.00	10.00	8.25	-1.75

Table D-1.--Continued.

OPI Scale / Group	TREATMENT Pre-test Mean	TREATMENT Post-test Mean	TREATMENT Mean Difference	CONTROL Pre-test Mean	CONTROL Post-test Mean	CONTROL Mean Difference
Altruism						
Sensers	16.71	16.86	0.15	20.57	16.57	-4.00
Intuitives	22.00	26.00	4.00	18.00	22.50	4.50
Thinkers	18.00	15.00	-3.00	21.33	21.00	-0.33
Feelers	21.50	23.50	2.00	17.50	15.00	-2.50
Practical Outlook						
Sensers	17.29	19.14	1.85	15.71	17.00	1.29
Intuitives	9.25	5.75	-3.50	8.50	9.25	0.75
Thinkers	20.33	23.67	3.34	17.67	17.67	0.00
Feelers	11.75	10.50	-1.25	12.00	11.75	-0.25
Masculinity-Femininity						
Sensers	30.86	30.14	-0.72	27.86	31.29	3.43
Intuitives	26.00	22.75	-3.25	27.25	30.50	3.25
Thinkers	29.33	30.33	1.00	30.67	31.67	1.00
Feelers	21.25	25.75	4.50	34.25	31.75	-2.50
Response Bias						
Sensers	8.71	8.14	-0.57	11.86	9.57	-2.29
Intuitives	12.50	9.00	-3.50	10.00	13.25	3.25
Thinkers	10.00	7.33	-2.67	11.67	13.00	1.33
Feelers	10.75	11.50	0.75	11.75	10.75	-1.00

Note - Number in each treatment and control group:
Sensers = 7; Intuitives = 4; Thinkers = 3; Feelers = 4.
Total N = 36.