PERSONALITY TRAIT CONSISTENCY DURING THE TRAINING PERIOD FOR A ROMAN CATHOLIC CONGREGATION OF TEACHING BROTHERS

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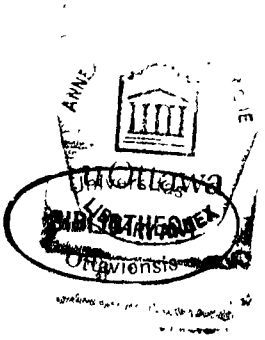

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CURRICULUM STUDIORUM

The writer was born in Medford, Massachusetts, on July 24, 1927, and received the degree of Bachelor of Arts from the Catholic University of America, Washington, D.C., in 1950, and the degree of Master of Arts in Psychology from the same institution in 1952 for which the thesis was titled The relationship of vocational interests to personality traits.

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INTRODUCTION

Despite the fact that a great deal has been written about personality and its development over the life span of the individual, there has been a relative paucity of experimental study concerned specifically with personality development during the adult years. It has been only in very recent years that the field of gerontology has achieved a medicum of prominence. Yet, within that field, the interest has centered about the years of late maturity. The years of early adulthood, when the average individual is making new adjustments to a career, to marriage, and to all the new social roles that emancipation from the home entails, curiously have received very little attention in so far as they may be related to personality development. The reasons for this are probably many and complex.

That most personality theorists attribute primary significance to situational determinants of early childhood perhaps partly explains the wealth of clinical and experiments studies dealing with personality development of children and the consequent dirth of these studies for adults. The impression is abroad that personality is malleable during the early part of the life span and relatively unmodifiable once the early and so-called formative years have passed. There are, of course, instances among adults of dramatic personality change in therapy or in-

unusual circumstances such as in war. Generally, however, such changes are considered to be the exception rather than the rule.

Little room seems to be left for the possibility that gradual changes in personality may occur as the person's basic roles in life change; yet it would seem within the realm of reason to expect some personality change as, for example, when the individual passes from the status of relative dependency in adolescence to the status of legal responsibility in adulthood. Similarly, changes of personality might be expected when other socially and psychologically important roles are assumed as in the case of entrance into an occupation or marriage.

The number of roles involved in the everyday life of the ordinary individual can be extensive, perhaps co-extensive with the number of groups and subgroups to which the individual belongs and which demand different types of behavior. This is not to suggest that personality, like the chameleon, is subject to constant alteration as the roles change. The unity of the individual probably demands a certain consistency of personality from one situation to the next, but within broad limits of consistency there would seem to be room for the emergence of diverse aspects of personality as the situational determinants of behavior change.

All roles are not of crucial importance to their dividual and some, therefore, may be expected to lead to relatively minor and transitory charges in the individual if any changes at all. On the other hand, some roles carry significant weight in the life of the individual and might be expected to lead to major and relatively permanent changes in personality. One such role which would seem to carry significant weight in life is that of occupation.

The suggestion that occupation may play a significant part in personality development of the young adult is based on the fact that in many occupations, particularly those on the skilled and professional levels, specific skills, interests, attitudes, and often value systems are demanded. That individuals are often selected for given occupations according to these and other criteria is well known. It is not known, however, whether these and other aspects of personality are modified or changed to bring them in conformity with the expectations of an occupational role either before or after an occupation has been entered into.

Occupations vary in the extent to which they touch upon the total life experience of the individual. Some may have significance for a very small segment of the person's life, whereas others touch upon and influence the total life

sphere of the person. Such an all-pervading occupation is that of a vocation to a Roman Catholic congregation of teaching brothers. This is, in fact, a way of life that embraces the occupation of teaching. During the training period for this way of life an aspirant is expected to acquire the requisite behavioral skills for living the chosen role. Though some selection operates in the admission of candidates, there is ample leeway to observe the effects of systematic training on personality. Outside influences being kept to a minimum during the training period, the study of such a group provides opportunity for analysing personality consistency in the young adult in its relationship to learning an occupational role. This is the point of the research being reported here. An attempt has been made to study the relationship of learning a particular occupational role to the development of personality in the young male adult.

CHAPTER I

THE ROLE OF OCCUPATION IN PERSONALITY DEVELOPMENT

During the approximately forty-five year history of the vocational guidance movement there has been an increasing interest in understanding the relationship between personality and occupation. Many assumptions have been made concerning the relationship and much research of a descriptive nature has been reported in the literature. This study is to investigate further the nature of that personality-occupation relationship.

It is not uncommon to encounter the tacit assumption that an already known relationship between personality and occupation exists, e.g., salesmen being gregarious, outgoing individuals or mathematicians being shy, introverted individuals. That this assumption is not wholly tenable is attested to by the many exceptions to the rule and by the dirth of theory which would provide the conceptual framework for describing a general relationship between the two. On the other hand, lending support to the idea that personality and occupation are related are the many studies reported during the past quarter century which have attempted to describe personality characteristics, cognitive, conative, or affective, of various occupational groups.

The usual procedure in this kind of study is to assess various aspects of personality of individuals considered to be representative of a given occupation and to infer that characteristics thus described are peculiar to that occupation and set it apart from others. It is not pertinent to the present investigation to survey the entire literature, but typical of this kind of research is that of Roe who reports psychological studies of artists[1] and of biologists[2], the work of Daniels and Hunter on MMPI personality patterns of various occupations[3], McCarthy's study on the personality traits of seminarians[4], the many studies by Dodge, e.g., the personality traits of the salesperson[5], of

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1 Anne Roe, "Artists and their work", Journal of Personality, Vol. 15, No. 1, 1946, p. 1-40.

2 Anne Roe, "Psychological characteristics of eminent biologists", Journal of Consulting Psychology, Vol. 13, No. 4, 1949, p. 225-246.

3 E.E. Daniels and W.A. Hunter, "MMPI personality patterns for various occupations", Journal of Applied Psychology, Vol. 33, No. 6, December 1949, p. 559-565.

4 Thomas J. McCarthy, "Personality traits of seminarians", Studies in Psychology and Psychiatry, Vol. 5, No. 4, 1942, p. 46.

5 A.F. Dodge, "What are the personality traits of the successful salesperson?", Journal of Applied Psychology, Vol. 22, No. 3, June 1938, p. 229-238.

the clerical worker[6], or of the teacher[7].

Although it is not a universal conclusion, it is usually found in these studies that there are personality characteristics peculiar to a given occupational entity. Granted that this may be generally true, research up to the present time gives little evidence as to why it may be true. Selection of aspirants according to occupationally peculiar personality criteria may be one explanation. Shaping the personality to conform to an occupational role after entry into the occupation is another possible explanation. Combination of these two factors offers yet a third possible explanation. Cattell has stated well the present knowledge on this problem. "Consequently, although it is commonplace that a man's occupation appears in his personality, we cannot document this with precision or ask how much of the convergence is due to vocation being selected to personality and how much to personality being shaped to a lifelong occupation".[8]

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6 A.F. Dodge, "What are the personality traits of the successful clerical worker?", Journal of Applied Psychology, Vol. 24, No. 5, October 1940, p. 576-586.

7 A.F. Dodge, "Study of the personality traits of successful teachers", Occupations, Vol. 27, No. 2, November 1948, p. 107-112.

8 Raymond B. Cattell, Personality, a systematic theoretical and factual study, N.Y., McGraw-Hill, 1950. p.418.

The bulk of the research to date has been concerned with describing personality characteristics for various occupations irrespective of factors of occupational selection or of personality changes after selection. Consequently little is known about personality changes that may occur after one enters into and begins to learn the behavior and skills requisite for a given occupation.

The aim of this study is to investigate changes of some personality characteristics after entry into an occupation. It seeks to answer the question: is there systematic variance of individual personality dimensions associated with the learning of an occupational role? Granted that selection factors operate at the time of entry into an occupation, subsequent to this do any predictable personality changes occur among the individuals comprising the occupational group? If group changes do occur, do they lead to greater or less similarity between the members of the group?

In this research the personality characteristics to be studied are a selected group of personality traits as these are measured by the Cattell Sixteen Personality Factor Questionnaire.[9] The occupational group to be studied

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9 R.B. Cattell and G. Stice, The 16 Personality Factor Test, Champaign, Illinois, Institute for Personality and Ability Testing, 1950.

is a sample of aspirants to a congregation of Roman Catholic teaching brothers in the Eastern part of the United States. This is a group of men who devote their lives to the education of boys and young men. The analysis of the personality traits is restricted to the period of training for this congregation, that is, from the time of entry into the congregation until first assignment to a teaching mission.

The problem might then be stated in a more precise way. Is there systematic, predictable variance of any personality traits, as these are measured by the Cattell Sixteen Personality Factor Questionnaire, during the period of training for this Roman Catholic congregation of teaching Brothers?

The hypothesis is advanced that certain personality traits will vary in a systematic way during the training period. Compared to the parent population of college students from which this occupational group has been drawn, it is expected that a significant trend toward dissimilarity on those traits of occupational significance will be found. It is expected that the occupational group will become more unlike the parent population during the training period for those traits of occupational significance. With regard to changes between the individual members of the group, two effects

are expected. For those traits which are largely a function of endogenous factors, similar training experiences are expected to have differential effects on the constituent members of the group. For those traits which are largely a function of exogenous factors, similar training experiences are expected to have similar effects on the constituent members of the group.

Although narrow sounding, the problem is of broad significance for at least three reasons. Research of this kind should cast further light on the theory of personality, especially of personality consistency as associated with occupational role in the adult. It should also contribute to a theory of vocational development in as far as vocational development is partly a function of both personality and the demands of an occupation. Aside from a relationship to theory, the question has practical implications in counseling individuals into or out of various occupations or the basis of personality analysis. Each of these points seems sufficiently important to warrant further discussion before presenting the methodological details of this research.

1. Literature on Personality Changes.

The concept of role has received increasing attention in psychology during the past decade. Role is used here in the sense defined by Sargent. "A role is a pattern or type of social behavior which seems situationally appropriate to the individual in terms of the demands and expectations of those in his group"[10].

As more and more emphasis has been placed on the situational determinants of behavior, the concept of role has become increasingly important as an explanatory construct. Where some have leaned toward the concept of individual personality traits as constructs for explaining behavior, others today lean more toward the determining influence of roles. The position being investigated in this research is that which has been advanced by Murphy[11] among others, i.e., that personality is to be best interpreted in terms of organism-field interaction. Sargent has stated more clearly the position

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10 S.Stansfeld Sargent, Social psychology, an integrative interpretation, N. Y., Ronald Press, 1950, p. 279.

11 Gardner Murphy, Personality, New York, Harper, 1947, chapter 1.

which we propose to investigate. "In all probability some aspects of personality will turn out to be constant; others to vary according to the situation"[12]. The aim of this research is to determine if certain personality traits change in a systematic, predictable way while others remain constant when a group of individuals are learning the requisite behavior and skills for fulfilling a particular occupational role.

The position taken by Anastasi[13] on the nature of psychological traits, if correct, would be consonant with the expectation that learning an occupational role should lead to the emphasis of certain psychological traits and the weakening of others. Commenting on Garrett's developmental theory of intelligence she offers the hypothesis that the emergence of specific abilities from "g" is due to educational influences in our culture. In an extensive review of the literature on this subject she offers evidence that the specific abilities which emerge in Western culture do so because of highly structured educational influences which emphasize the development of particular

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12 Sargent, op. cit., p. 288.

13 A. Anastasi, "Nature of psychological traits", Psychological Review, Vol. 55, No. 31, May 1948, p. 127-138.

intellectual traits. It is her opinion that no such highly organized educational influences exist with regard to the emotional and motivational sphere; therefore there is wider divergence of individuals in this sphere and that if the culture were structured in this regard, greater emotional and motivational similarity would result.

A similar position has been advanced by Anderson[14] He argues that the variance of environment plus the variance of individuals increases the differences between members of a given population. Conversely, if there is interaction, restriction of the environment by subjecting all constituent members to similar training influences should influence individual variation by decreasing the differences between the members of the population on those traits which are of occupational significance. Obviously, this reasoning would hold only if constitutional factors were operating in the same way for the entire population.

The experimental studies by Lippitt and White[15] on leadership and group life are pertinent here because they

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14 John E. Anderson, "Freedom and constraint or potentiality and environment", Psychological Bulletin, Vol. 41, No. 1, January 1944, p. 1-29.

15 R. Lippitt and R.K. White, "An experimental study of leadership and group life" reported in Theodore M. Newcomb, et al., Readings in Social Psychology, N.Y., Holt, 1947, p. 315-330.

demonstrate clearly the influence of variation of leadership on group and individual behavior. These well known studies show that varying leadership between democratic, authoritarian, and laissez-fairetypes leads to different kinds of roles on the part of the group members and consequent changes in behavior. Trait changes perse were not studied in these researches.

In other studies changes of attitudes, adjustment, and occasionally of personality traits have been investigated. Kuhlen[16] in 1945 reviewed the literature that had been published through 1944 on age differences in personality. Most of the studies were cross-sectional and so were more appropriately differences between age groups rather than age changes. Furthermore, as Kuhlen points out, most of the studies fail to take into account the relationship of change to occupation, sex, and cultural level, to mention but a few factors which may have some influence on the nature and direction of personality change.

A few test-retest studies dealing with various aspects of personality change have been conducted on students

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16 Raymond G. Kuhlen, "Age differences in personality during adult years", Psychological Bulletin, Vol. 42, No. 6, June 1945, p. 333-358.

at different education levels. Crook[17] tested a group of 52 college women as undergraduates and again six and one-half years later on the Thurstone Personality Schedule and found a tendency toward better adjustment on the second testing. This change, however, he ascribes to the property of the test items which operate to introduce chance factors.

Roberts and Fleming[18] in a longitudinal study of personality changes occuring from late adolescence through maturity found that for 25 college women, attitudes and traits judged to be present by friends' ratings and questionnaires persisted from college into married life. The most likely change was found to be in the surgency-desurgency dimension.

Weber[19] tested 44 college freshmen women on six occasions, one week apart, with the Guilford S.E.M. Test, the Allport A-S Reaction Study, and the American Council on Education Psychological Examination. He found that intelli-

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17 Mason N. Crook, "A retest with the Thurstone Personality Schedule after six and one-half years", Journal of General Psychology, Vol. 28, First half, January 1943, p. 111-120.

18 K.E. Roberts and V.V. Fleming, Persistence and change in personality patterns, Social Research Child Development, Mongraph 8, No. 3, 1943, quoted in R.B. Cattell, Personality, N. Y., McGraw-Hill, 1950, p. 614-615.

19 C.O. Weber, "Function-fluctuation and personality trends of normal subjects; test-retest variability", American Journal of Psychology, Vol. 51, No. 4, October 1938, p.702-708.

gence was not reliably related to variability on the personality tests, that ascendant individuals were more variable on the retests than submissive, and that those who had lower emotionality scores were more variable on the retests than those having high emotionality scores.

Pintner and Forlano[20] have reported a study of 58 fifth grade boys and 42 fifth grade girls tested four times at two intervals on the Aspects of Personality Inventory. They found that responses move in the direction of more favorable scores with successive testing, that stability of scores is high, and that consistency is not related to ascendance-submission.

Robertson[21] tested a group of women as resident upperclassmen in college and again two and one-half years later on the Royer Personality Inventory. He concludes that self ratings do change and in the direction of greater dominance, more extroversion, and better adjustment.

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20 Rudolf Pintner and G. Forlano, "Four retests of a personality inventory", Journal of Educational Psychology, Vol. 29, No. 2, February 1938, p. 93-100.

21 Arrie E. Robertson, and E.L. Stromberg, "Stability of personality ratings during college residence", School and Society, Vol. 50, No. 488, November 11, 1939, p. 639-640.

A study is reported by Darley[22] who tested 319 males and 212 females on the college level. They were tested within one year on the Minnesota Scale for Survey of Opinions, the Bell Adjustment Inventory, the Minnesota Inventory of Social Preferences, and the Minnesota Inventory of Social Behavior. No experimental variable was introduced between the test and retest. The results indicate group and individual changes, with stability of the trait in part a function of the trait itself. It was found that maladjustments, as measured, appeared more stable than either the normal social activities and preferences or generalized feelings and opinions which were measured. Sex differences were found. The author concludes that the amount of change is a function of the aspect of personality being measured and errors of measurement, and that, of all aspects of personality, personality traits are probably least likely to change.

Layton[23] administered the MMPI to 9 male and 6 female graduate psychology students at one week intervals for

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22 John G. Darley, "Changes in measured attitudes and adjustments", Journal of Social Psychology, Vol. 9, No. 2, May 1938, p. 189-199.

23 William L. Layton, "Variability of individuals' scores upon successive testings on the MMPI", Education and Psychological Measurement, Vol. 14, No. 4, Winter 1954, p. 634-640.

occasions ranging from 9 successive tests to 18 successive tests. One individual took the test 9 successive times; six, 18 successive times; the remaining eight, between 9 and 18 times. Using the analysis of variance technique he found considerable intra- and interindividual variation on the MMPI over successive testings, the amount of the variance on the various MMPI scales being a function of both the individual and the scales. There was no tendency for the group to vary systematically on any of the scales from trial to trial, leading to the conclusion that variation was primarily a function of the individual.

The most recent study in the literature and perhaps the most pertinent to this research is a longitudinal study reported by E. Lowell Kelly[24] on consistency of the adult personality. The samples comprised 176 males and 192 females, 116 of the men and an equal number of the women being married to each other. All of these persons were assessed initially with an elaborate battery of techniques when they were engaged to be married. The retest occured 16 to 18 years later and included many but not all of the original assessment techniques. It was found that absolute changes in

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24 E. Lowell Kelly, "Consistency of the adult personality", American Psychologist, Vol. 10, No. 11, November 1955, p. 659-681.

personality scores tended to be small but similar in direction and magnitude for men and women. Evidence was found for both consistency and change in the variables assessed, with the changes being relatively specific rather than reflecting over-all tendency to change. The study was not designed in such a way as to determine correlates of personality changes and the author concludes that changes are likely to be difficult to predict for individuals. Important to the present research was the interpretation that the measurable changes showed little or no relation to known forces assumed to be dominant in an individual's social environment. This conclusion is based on finding that husbands and wives did not tend to become more like each other during the interval studied. It is not known, however, how similar their social environments actually were. It may well be that the social roles of husband and wife are sufficiently different to demand relatively autonomous personality growth.

Because of differences in tests used, samples studied, and general methodological procedures it is not possible to make direct comparisons between all of these studies. However, some tentative general conclusions can be drawn.

The most striking feature of all these studies, with the exception of those by Lippitt and White, is the complete

absence of any attempt to describe the conditions surrounding the individuals between the initial and final assessment of personality. Thus, the conclusion generally found is that variance is due in part to the scales or to the individual. No attempt has been made to determine if the group would vary in a systematic way if all of the individuals were exposed to a similar experimental variable. In the Iowa studies of Lippitt and White where experimental variables were introduced, systematic and predictable changes in group behavior did occur. However, as pointed out above, personality trait changes as such were not investigated.

A further observation from these studies, but one which is advanced with caution because of conflicting evidence, is that the amount of variance may be related to such factors as ascendance-submission or general emotionality of the individual. This is the same as the above conclusion that the variance is partly an individual matter, but here the individual factor is specified.

The present state of knowledge with regard to personality trait change would seem to call for a study in which the individuals are under the influence of a similar environment between the pre and post assessment of personality traits. In this way the factor of individual variance could

be taken into account, and, in addition, this procedure would allow more meaningful interpretation of group variance should any occur.

2. Theory of Vocational Development.

As recently as 1951 Ginzberg[25] stated that it was his opinion that counseling was being done without benefit of theoretical basis. To correct the situation he and a team of workers formulated the Ginzberg theory of occupational choice. The four elements to this theory are: a) occupational choice is a developmental process which typically takes place over a period of some ten years; b) the process is largely irreversible in that it produces changes in the individual; c) the process of occupational choice ends in a compromise between interests, capacities, values, and opportunities; d) there are three periods of occupational choice: i) the period of fantasy choice, governed largely by the wish to be an adult, ii) the period of tentative choices beginning at about age 11 and determined largely by interests, then by capacities, and then by

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25 Eli Ginzberg, J.W. Ginsburg, S. Axelrod, and J.L. Herma, Occupational choice, N. Y., Columbia University Press, 1951, ix - 271 p.

values, and iii) the period of realistic choices beginning at about age 17 in which exploratory, crystallization, and specification phases succeed each other.

Super[26] has severely criticized Ginzberg's theory on several counts. He maintains that Ginzberg does not build his theory on previous work, that for Ginzberg choice is defined as preference rather than entry and so means different things at different levels, that Ginzberg's distinction between choice and adjustment is invalid because choice is an on-going process which blends with adjustment, and finally that Ginzberg fails to study the compromise process between interests, capacities, values, and opportunities.

According to Super an adequate theory of occupational development would synthesize the results of previous research, would take into account the continuity of development and differences in the stages, choices, entry, and adjustment, and would explain the process through which interest, capacities, values, and opportunities are compromised. To meet these requirements he has advanced the framework of a theory of vocational development in which he specifies

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26 Donald E. Super, "A theory of vocational development", American Psychologist, Vol. 8, No. 5, May 1953, p. 185-190.

twelve elements necessary to the theory and which he summarizes in ten propositions. The summary of these 10 propositions is presented in Appendix 1.

Some of these propositions are well verified in psychological literature. For example, proposition 1 states that individuals differ in abilities, interests, and personalities. Proposition 2, states that individuals are qualified, by virtue of these characteristics, each for a number of occupations. Proposition 3, states that each of these occupations requires a characteristic pattern of abilities, interests, and personality traits, with tolerances wide enough, however, to allow both some variety of occupations for each individual and some variety of individuals in each occupation. There is ample evidence in the psychological literature to verify these propositions and Super quotes this literature in presenting his theory. On the other hand, some of the propositions have not yet been verified. For example proposition 4, which might be called "Identification and the role of models", suggests that occupational choice may be achieved through identification with a model such as the father. Research is needed to verify this. Another which is unverified is proposition 9 which deals with the dynamics of career patterns and the process of

compromise between individual and social factors and between self concept and reality. Super sees this process of compromise as one of role playing, whether the role is played in fantasy, in the counseling interview, or in real life activities such as entry jobs[27]. On this problem there is little experimental work. To quote Super, "The interaction of the individual and his environment during the growth and early exploratory stages, little understood though the process actually is, has been much more adequately investigated than has this same process during the late exploratory, establishment, and maintenance stages"[28]. The individual changes that take place in the process of compromise are little known and this is especially true for these stages where the individual enters an occupation to try it out, where he accepts the occupation and becomes established in it, and finally where he is in the occupation as a lifetime career.

This research is aimed at a study of possible personality trait changes occuring in this process of compromise

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27 Donald E. Super, "Vocational adjustment: implementing a self-concept", Occupations, Vol. 30, No. 2, November 1951, p. 88-92.

28 D. E. Super, op. cit., Amer. Psychol., Vol. 8, No. 5, 1953.

during the periods of entry and early establishment in an occupation and thus should offer additional experimental evidence against which to judge this aspect of Super's theory of vocational development.

3. Vocational Counseling Implications.

The third reason for the present study is that it has a direct bearing on vocational counseling.

It is common practice among counselors to help the counselee select from among the wide variety of careers open to him those which seem to be most compatible with his particular constellation of personality characteristics. Personality is used here in its broadest sense to include cognitive, conative, and affective factors. The rather extensive literature dealing with occupational ability patterns lends strong justification to this counseling procedure. This is especially true when the counselor recognizes the wide latitude in the personality demands of a given occupation. There would be the possibility, however, of even wider latitude if it should be found that persons, once having entered an occupation, are able to modify certain personality characteristics to conform more closely with the occupational role they live. If this were the

case, the counselor might then place greater emphasis on flexibility of the individual rather than on the immediate presence or absence of certain personality characteristics. Since this study is aimed at determining if some personality characteristics are systematically modified after entry into an occupation, it should have some practical signicance for vocational counseling.

Having presented the problem to be investigated, attention is now turned to the specific methodological procedures of the study. In the following chapter the test used, the group studied, and the method of investigation are discussed.

CHAPTER II

EXPERIMENTAL DESIGN

1. The Cattell Sixteen Personality Factor Questionnaire

The test as a whole.- The Cattell Sixteen Personality Factor Questionnaire, hereafter referred to as the 16 P.F. Test, is a relatively new instrument in the field of personality measurement. It was published in 1950 and is based on several years of research by Cattell and his students on factorial studies of personality traits.

In a series of studies dating from 1943 Cattell has attempted to demonstrate that personality can be understood best in terms of empirically determined trait unities[1]. Following Allport's trait approach to personality, Cattell set out to determine the basic or what he calls source traits of personality. His assumption was that if the trait were actually basic it would emerge whether the individual were studied by means of objective tests, behavior ratings, or questionnaires. Accordingly, his researches have employed

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1 Raymond B. Cattell, "The description of personality: I. the foundations of trait measurement", Psychological Review, Vol. 50, No. 6, November 1943, p. 559-594.

all three methods. These studies, though published separately in the journals, are brought together in his 1946 book The Description and measurement of personality[2] and in his 1950 book Personality, a systematic theoretical and factual study[3]. Following the publication of the latter book, another article appeared in which Cattell and Saunders attempted to show the relationship of personality factors from behavior rating, questionnaire, and objective test data[4]. With two or three exceptions the matchings were poor. The authors attribute this to methodological difficulties rather than to the fact that one procedure may tap personality traits different from those tapped by another procedure. In any case, until further research is reported, one cannot be sure that the questionnaire used in the present study is measuring exactly the same traits as might be measured by behavior rating, by objective tests, or by another personality questionnaire. Although Cattell claims to be measuring the

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2 Raymond B. Cattell, The description and measurement of personality, N. Y., World Book, 1946, xv - 602p.

3 R. B. Cattell, Personality, a systematic theoretical and factual study, N. Y., McGraw-Hill, 1950, xii - 689p.

4 Raymond B. Cattell and D.R. Saunders, "Interrelation and matching of personality factors from behavior rating, questionnaire, and objective test data", Journal of Social Psychology, Vol. 31, Second half, May 1950, p. 243-260.

universe of basic personality traits through the 16 P.F. Test[5], this is a questionable assumption.

The 16 P.F. Test is designed to measure twelve personality traits which have most consistently emerged in the three different types of analysis, plus four traits which have thus far emerged only on questionnaire material. The test design is such that each question contributes to one factor only. Thus scores for each factor may vary independently of each other, affording the interested researcher an instrument for analyzing intertrait pattern variability.

Although the test is published in two purportedly equivalent forms, only Form A has been used in this study. This was done for two reasons. Total administration time was cut in half and the split-half reliability coefficients of Form A are higher than for Form B. The authors maintain this due to the better items having been included in Form A[6].

The 16 P.F. Test is too new to have acquired a sufficiently extensive research literature by means of which it can be adequately evaluated. However, its factorial structure and the relatively wide range of traits assessed

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5 (no author) Handbook for the Sixteen Personality Questionnaire, Champaign, Illinois, Institute for Personality and Ability Testing, (no date) p. 1.

6 (no author) The 16 Personality Factor Questionnaire, Handbook, Supplement A, Champaign, Illinois, Institute for Personality and Ability Testing, (no date) p. 1.

by it make the test an instrument that lends itself well to a statistical analysis of a comparatively broad sphere of personality.

The scales of the 16 P.F. Test - The sixteen scales of the test each measure a separate factor or trait of personality. Although complete orthogonality has not been achieved between the scales, more than four-fifths of the 120 intercorrelations are below 0.15 and only six out of the total exceed 0.30, but none exceeds 0.40[7]. This suggests that each scale taps relatively distinct components of personality.

Each factor is made up of a number of surface traits. These are correlation clusters of behavior components whose relationship is explained in terms of the underlieing source trait or personality factor. Each scale is thus identified by a particular personality factor, the source trait, which may be described in terms of the behavior components, surface traits, which are related through it.

The sixteen personality factors or source traits with the appropriate surface traits for each are listed in Appendix 2. In the body of the thesis these factors will

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7 Handbook, op. cit., p. 6.

be identified by the letter that precedes the name, e.g., "A", "B", ..."Q_4"; "A", signifying factor "Cyclothymia versus schizothymia"; "B", signifying "General intelligence versus mental defect"; "Q_4", signifying "Nervous tension".

2. The Sample Population

The group studied in this research comprised 81 males who had entered a Roman Catholic congregation of teaching Brothers in America between the years 1950 and 1954 and who were still in training in 1955. No one was included who had been dropped from the congregation for any reason; nor was anyone included whose training had been interrupted to be sent out on a teaching mission. These individuals were not included because it was assumed that the environmental conditions to which they were exposed after interruption of training are sufficiently different from that of the men still in training to make them a different experimental group.

At the time these men were examined it was customary in the congregation to serve a 6 month postulancy at the end of which a simple profession was made and the religious habit received. This period was followed by a 2 year period of novitiate, 18 months of which was devoted almost exclusively to religious activities while the last 6 months

also included college-level academic work. At the end of novitiate simple vows were taken and the candidate continued his four year program of academic studies. At the completion of the college training, final vows are taken and the candidate assigned to a teaching mission.

This study is devoted solely to the period from postulancy to the last year of college, that is, to the period of training only. For the sake of more convenient analysis the period of postulancy and novitiate will be considered here to constitute an entrance-exploratory stage, while the period from the end of novitiate through final vows will be considered an acceptance-establishment stage.

The population of this study is divided into five separate groups according to the time of entry into the congregation. Group I, comprised of 20 individuals, entered the congregation in 1954; Group II, 13 individuals, entered in 1953; Group III, 23 individuals, entered in 1952; Group IV, 16 individuals, entered in 1951; Group V, 9 individuals, entered in 1950. It is important to bear in mind that the numbers reported here did not include all of those who entered in each of the respective years. Several had since been dropped from the congregation while others had been assigned to teaching missions. Consequently, the results of this research may not be generalized to all entrants into

this congregation during these five years, but only to those who had gone through the usual periods of training.

3. Experimental Procedure.

Each of the five groups was examined twice with the 16 P.F. Test at different levels of training. At the time of initial testing all individuals were given a battery of psychological tests including, in addition to the 16 P.F. Test, measures of academic achievement, scholastic aptitude, and vocational interests. At the time of the second testing only the 16 P.F. Test was given. All tests were administered in group sessions under standard conditions.

The occasions on which the test and retest occured varied from one group to the next. Group I was examined at the postulant level and again one year later at the level of first-year novitiate. Group II was examined at the postulant level and again two years later at the second-year novitiate level. Group III was examined at the postulant level and again three years later at the level of first-year scholasticate (equivalent to second year of college). Group IV was examined at the level of first-year novitiate and again at the level of second-year scholasticate (equivalent to third year of college). Group V was examined at the level of second-year novitiate and again at the level of third-

year scholasticate (equivalent to fourth year of college). These data with the median and range of ages at the time of initial testing and the mean and standard deviation of the Total Score on the American Council on Education Psychological Examination for each group are presented in Table I.

Inspection of Table I indicates some important characteristics of the five groups. It will be noted that the age ranges for Groups I, II, III, are essentially the same at the time of initial testing, whereas the age ranges for Groups IV and V are similar to each other and are much more restricted than the age ranges for the first three groups. The upper ranges are restricted for Groups IV and V, suggesting the influence of selection, possibly that the older candidates drop out before reaching these levels.

Since different forms of the American Council on Education Psychological Examination have been used, direct intercomparison of all the means and standard deviations reported in Table I would not be legitimate. However, the same form was used for Groups III, IV, and V. It will be noted that there is a consistent tendency for the mean score to rise from one level of training to the next. Again, the probability of a selection factor operating is advanced.

Table I.- Date of entry, level at initial testing with median and range of age and mean and standard deviation of the A.C.E., and level at second testing for each group.

	Group				
	I N:20	II N:13	III N:23	IV N:16	V N:9
Entrance date	1954	1953	1952	1951	1950
Initial test Level	Postu-lant	Postu-lant	Postu-lant	1st Novit.	2nd Novit.
Median age	18 yrs.	18 yrs.	18 yrs.	19 yrs.	20 yrs.
Age range	17-25	17-26	17-25	18-21	19-21
A.C.E. Mean	104.0[a]	93.8[b]	113.2[c]	120.8[c]	124.5[c]
S.D.	16.2	18.7	18.0	20.4	14.9
Second test Level	1st Novit.	2nd Novit.	1st Schol.	2nd Schol.	3rd Schol.

a 1954 College edition
b 1952 College edition
c 1948 College edition

That factors of selection have probably operated to bring about differences between the groups will have to be taken into account when making intergroup comparisons of the personality trait changes that may or may not be found to take place during the different levels of training.

It has been hypothesized in this study that part of the reason for finding homogeneity of personality traits among individuals comprising an occupational group is due to changes in personality traits occuring during the entrance-exploratory and/or the acceptance establishment stage. If one were to simply compare groups at these different stages, greater homogeneity might be found at the more advanced levels, but it would not be possible to determine if the homogeneity were due to selection or to personality trait change. On the other hand, analysing the same group longitudinally and determining the kind of extent of intragroup variation would indicate whether or not there are systematic changes when selection factors are held constant.

In order to determine the amount of intragroup variance and also to determine how much of this variance is due to the nature of the personality trait, how much to individual factors, how much to common influences acting on the group as a whole, and how much to the interaction of these factors, it was decided to use the analysis of variance

technique. Although the analysis of variance technique is applicable to the study of each of the five groups separately, because of the experimental design of this study, analysis of variance cannot be used to make comparisons between the five groups.

Even using a method other than analysis of variance, if these intergroup comparisons were made in this study and differences between the groups were found, one would not know if the differences stem from factors of selection or from changes that have occured during the different training periods. With this limitation in mind, intergroup comparisons might still yield helpful interpretive information by indicating if changes that occur on one level also occur on the next level. If comparable continuing changes between the groups were found it would be consistent with the hypothesis advanced here that personality trait change is one factor leading to homogeneity in an occupational group. Contrariwise, if similar changes were not found from one group to the next, it would not necessarily disprove the hypothesis, for it may be that one trait changes systematically during one level of training while entirely different traits change at another level. Thus the intergroup comparison method is not an acceptable way to test the hypothesis advanced in this study because, though it allows for its proof, it does not allow for its disproof.

Analyzing the variance which occurs within each group from one occasion to the next affords a legitimate way to test the hypothesis of systematic personality trait change for the periods studied. Such a procedure, however, carries the obvious limitation of the degree to which one might generalize the findings since the individuals comprising each of the five groups may not be truly representative of the population of men in training for this particular occupation. No attempt has been made to obtain a random sample of brothers-in-training in this research. Accordingly, generalization of the conclusions must be restricted.

In the following chapter the experimental data and their statistical analyses are presented and discussed.

CHAPTER III

EXPERIMENTAL DATA AND STATISTICAL ANALYSES

In this section the experimental data and the statistical analyses of these are presented and discussed. Each group is treated separately in succession from Group I through Group V, after which the separate findings are integrated.

The 16 P. F. Test yields a separate raw score for each of the sixteen traits measured. Since it was desired to determine the total variance of all scales combined and also to make interscale comparisons, it was necessary to convert the raw scores of each scale into comparable unit scores. A supplement[1] to the Handbook for the 16 P. F. Test provides tables for converting the raw scores of each scale into ten point scale scores. These tables provide equal-unit interval scores for which each scale point is one-half of a standard deviation (of raw score) different from the next. The mean of the ten point scale scores is 5.5, the standard deviation 1.5, and the range from 1 to 10.

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1 (no author), The 16 personality factor questionnaire handbook, supplement A - tabular supplement, Champaing, Ill., Institute for Personality and Ability Testing, (no date), p. 12.

Conversion tables are provided for the general population, for students, and for men separately. In each of the three cases norms are presented for both forms of the test combined and for each form separately. The conversion table used in this study was the one for male high school seniors and college students on Form A only. The sample of men studied in this research would constitute a part of that total population; however, the individuals in this research were not a part of the original standardization group on which the ten point scale scores were determined.

All of the statistical calculations of this research were carried out using the ten point scale scores. It might be added parenthetically that the calculations were also carried out using the raw scores, and, although the estimates of variance were different, the F ratios were essentially the same in both instances. The data reported in the following pages are in terms of ten point scale scores only.

Before proceeding to the presentation of the data and analyses it is important to clarify the kind of experimental model being used in this research because the nature of this model specifies the generalizations which may be drawn.

The three essential characteristics of the experimental model are: 1) a fixed number of personality traits have been assessed on 2) a fixed number of occasions for

3) a varying number of individuals. Accordingly, since personality traits and occasions have not been sampled, generalizations may be made only for the particular traits and occasions studied. Although no specific procedures were followed to obtain samples representative of all individuals at given levels of training, it is assumed that the groups studied are typical of individuals ordinarily found at the different training levels. Should this be so, one would expect for the traits and occasions studied similar personality trait variance at the given levels for other groups preparing for this occupation. McNemar[2] calls this a mixed model design. It is one in which two variables, personality traits and occasions, are fixed, and in which the third variable, individuals, is not fixed.

The essential problem in this research is to determine if there is systematic variation of personality traits from occasion 1 to occasion 2 for each group as a whole. However, since this is only one of seven possible sources of variance present, a statistical technique for determining the relative importance of each source of variation was used to analyze the data. This was the analysis of variance

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2 Quinn McNemar, Psychological statistics, 2nd edition, N. Y., Wiley, 1955, vii-408 p.

technique. Variance in this problem may be associated with the occasion on which tested, with the individuals comprising the group, with the personality traits assessed, or with the interaction of any two or of all three of these variables. McNemar[3] has presented the appropriate analysis of variance procedures for determining the relative contribution to the total variance of the separate components in a mixed model type of study. These procedures have been followed in this research and are explained under the analysis of the data of Group I which follows.

1. Analysis of Data of Group I

The means and standard deviations for each of the sixteen personality traits as measured on each of the two occasions for Group I are presented in Table II. The test and retest occasions for this group were one year apart, the first assessment of the personality traits occuring at the postulant level and the second at the first-year novitiate level.

The results of the analysis of variance for Group I are presented in Table III. In this table the sums of squares, the degrees of freedom, the resulting variance

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3 McNemar, ibid., p. 330.

Table II.- Means and standard deviations of the 16 personality traits on occasions 1 and 2 for Group I.[a]

Personality trait	Occasion 1		Occasion 2	
	Mean	S. D.	Mean	S. D.
A	5.80	1.94	5.75	1.89
B	5.35	1.32	5.50	1.69
C	4.25	1.58	5.05	1.91
E	4.05	1.72	4.00	2.00
F	4.90	1.92	4.85	2.01
G	5.70	1.70	5.65	2.10
H	4.00	2.02	3.85	2.08
I	7.05	1.69	7.20	1.66
L	6.15	1.82	5.80	1.80
M	4.70	1.85	3.95	2.04
N	3.65	1.46	3.60	1.68
O	5.60	1.93	5.70	1.98
Q_1	2.90	1.14	2.80	1.33
Q_2	4.90	1.37	5.55	1.63
Q_3	5.30	1.82	5.65	2.01
Q_4	5.80	1.94	4.95	2.31

a N:20

Table III.- Analysis of variance for 16 personality traits measured on 2 occasions for 20 individuals of Group I.

Source of variation	Sum of Squares	df	Variance estimate	F	Significance
Occasion (O)	.04	1	.04	0.03	n.s.
Trait (T)	670.22	15	44.68	8.24	.001
Individual (I)	149.91	19	7.89	----	----
Interaction: OxT	26.89	15	1.79	1.39	n.s.
Interaction: OxI	31.74	19	1.67	1.29	n.s.
Interaction: TxI	1545.37	285	5.42	4.20	.001
Interaction triple: OxTxI	368.83	285	1.29	----	----
Total	2793.00	639			

estimates of the separate components, with the F ratios and the level of significance of each are reported.

After computing the variance estimates, it was necessary to determine which of these contributed in a significant way to the total variance. The principles governing the choice of error term appropriate for determining the level of significance of the F ratio for each variance estimate when dealing with the mixed model type of design are presented by McNemar[4]. Following his reasoning, the triple interaction terms is appropriate for testing all three 2-way interactions; the double interaction "occasion-individual", if significant, is appropriate for testing the significance of the "occasion" variance; the double interaction "trait-individual", if significant, is appropriate for testing "trait" variance. No test of "individual" variance is possible in this model, but, since this would yield information only on individual differences, it is not important for the present research which is primarily concerned with group variance from occasion to occasion. In those instances where either the "occasion-individual" component or the "trait-individual" component is found not to differ significantly from the triple interaction

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4 McNemar, ibid., p. 330.

term, the sum of squares for that component is added to the sum of squares for the triple interaction and the respective degrees of freedom of each are summed also. The quotient of this new sum of squares and degrees of freedom becomes the variance estimate or error term against which to check the significance of the appropriate single component term. Throughout the statistical analyses which follow the error terms as listed above were used to test the level of significance of each source of variation. The confidence limits accepted in this study are .01 and beyond.

For Group I the "occasion-trait" variance estimate, tested against the triple interaction term, gave an F ratio of 1.79/1.29 : 1.39 which, for degrees of freedom 15 and 285, does not reach the level of statistical significance. Accordingly, it may be concluded that what is said for all traits considered together may also be said for the traits considered individually. The null hypothesis is accepted in this case; that is, for the traits considered individually, the number of exceptions to group effects failed to reach the level of statistical significance. The "occasion-individual" estimate of variance gave an F ratio of 1.67/1.29 : 1.29 which, for degrees of freedom 19 and 285, is not significant. The number of exceptions to group effects among the individuals also did not reach the level of statistical significance. The "trait-individual" component

gave an F ratio of 5.42/1.29 : 4.20 which, for degrees of freedom 285 and 285, is significant at the .001 confidence limit. This means that intertrait variance was a highly individual matter for the group. There were significant differences for intertrait variance between the individuals comprising the group. Thus the personality traits differed in a meaningful way among the persons in the group.

Since the variance estimate for the "occasion-individual" component was not significant, its sum of squares was added to that of the triple-interaction term and this sum was divided by the sum of the respective degrees of freedom to give the appropriate estimate of variance against which to test the significance of the "occasion" component. The resulting F ratio for the "occasion" component was .04/1.32 which, being less than 1.00, is not significant. For the group as a whole there was no systematic variance of personality traits from one occasion to the next. The test of the "trait" variance gave an F ratio of 44.68/5.42 : 8.24 which, for degrees of freedom 15 and 285, is significant at the .001 level of confidence. Intertrait variance contributed in a meaningful way to the total variance for this group.

To summarize the results for Group I, it was found that for the group as a whole significant personality trait

changes did not occur from one occasion to the next, and exceptions to this were found to be statistically not significant for both individuals and traits. Intertrait variability was found to contribute to the total variance in a significant way; however the differences between the traits varied in a meaningful way among the individuals of the group. It could not be concluded that the persons in this group possess the same traits to the same degree, but it was found that, for the occasions studied, the personality traits of each individual remained essentially the same.

2. Analysis of Data of Group II.

Group II was tested on the postulant level and two years later at the second-year novitiate level. In Table IV the means and standard deviations for each of the sixteen personality traits as measured on occasion 1 and again on occasion 2 are presented for Group II.

Following the same procedures as explained with Group I, the total variance for Group II was analysed into separate components in order to determine the significance of the contribution to the whole of each of these components. The sums of squares, the degrees of freedom, the estimate of variance for each source of variation, and the F ratios with the level of significance of each are summarized in Table V for Group II.

Table IV.- Means and standard deviations of the 16 personality traits on occasions 1 and 2 for Group II.[a]

Personality trait	Occasion 1		Occasion 2	
	Mean	S.D.	Mean	S.D.
A	6.08	2.04	5.62	2.29
B	4.84	1.68	4.92	1.98
C	5.00	2.11	5.69	1.69
E	3.77	2.00	4.15	1.71
F	4.23	1.05	3.69	2.02
G	6.62	1.62	6.54	.92
H	3.54	1.39	4.00	1.80
I	6.38	1.92	7.54	1.44
L	4.85	1.78	4.23	1.42
M	4.77	1.80	4.00	1.92
N	2.77	.89	4.31	1.89
O	4.84	1.53	4.46	1.74
Q_1	3.00	1.47	2.31	1.26
Q_2	5.46	.94	5.15	1.76
Q_3	6.23	1.58	6.00	1.92
Q_4	4.46	1.50	4.46	1.09

a N:13

Table V.- Analysis of variance for 16 personality traits measured on 2 occasions for 13 individuals of Group II.

Source of variation	Sum of Squares	df	Variance estimate	F	Signi-ficance
Occasion (O)	.02	1	.02	0.01	n.s.
Trait (T)	526.73	15	35.12	8.42	.001
Individual (I)	32.78	12	2.73	----	----
Interaction: OxT	44.17	15	2.94	1.47	n.s.
Interaction: OxI	14.89	12	1.24	0.62	n.s.
Interaction: TxI	750.99	180	4.17	2.08	.001
Interaction-triple: OxTxI	360.42	180	2.00	----	----
Total	1730.00	415			

The "occasion-trait" component gave an F ratio of 2.94/2.00 : 1.47 which, for degrees of freedom 15 and 180, is not statistically significant. For the traits considered individually, the number of exceptions to over-all effects failed to reach the level of statistical significance. The "occasion-individual" estimate of variance gave an F ratio of 1.24/2.00 which, being less that 1.00, is not significant. Among the individuals of the group there were no statistically significant exceptions to the group effects. The "trait-individual" estimate of variance gave an F ratio of 4.17/2.00 : 2.08 which, for degrees of freedom 180 and 180, is significant at the .001 level of confidence. The individuals in the group differed significantly among themselves with respect to intertrait variability. There were statistically important personality trait differences among the persons comprising this group.

As with Group I, the "occasion-individual" component was not significant. Since this was so, the same procedure as stated previously was followed to obtain the error term to test the "occasion" estimate of variance. The F ratio in this case was .02/1.95 which, being less than 1.00, is not significant. The group as a whole did not show a significant change in personality traits for the occasions studied. The estimate of variance for the "trait" component gave an F ratio of 35.12/4.17 : 8.42 which, for

degrees of freedom 15 and 180, is significant at the .001 level of confidence. Intertrait variance contributed in a significant way to the total variance for Group II.

The results of the analysis for Group II are essentially the same as those for Group I. The personality traits of the group as a whole did not change in a significant way from one occasion to the next, and there were no statistically significant exceptions to this with respect to either the traits assessed or the individuals studied. Differences between the traits measured were found to be important sources of variation; however, these differences were highly individual in nature. Though the individuals remained essentially the same from one occasion to the next for the personality traits studied, it could not be concluded that each individual possessed the same traits to the same degree as every other individual in the group.

3. Analysis of Data of Group III.

When first tested, the individuals comprising Group III were on the postulant level; when tested the second time three years later, they were on the level of first-year scholasticate. The means and standard deviations for each of the 16 personality traits as measured on the two occasions are presented in Table VI.

Table VI.- Means and standard deviations of the 16 personality traits on occasions 1 and 2 for Group III.[a]

Personality trait	Occasion 1		Occasion 2	
	Mean	S.D.	Mean	S.D.
A	5.91	1.51	4.65	1.28
B	4.74	2.15	4.91	2.03
C	5.09	1.97	6.09	1.88
E	4.35	1.57	4.43	1.54
F	5.61	1.49	5.17	1.45
G	5.43	1.12	5.96	1.67
H	4.70	1.79	3.74	1.59
I	7.04	2.23	6.22	1.73
L	5.39	2.04	4.52	2.00
M	5.56	2.14	4.48	1.47
N	3.43	1.39	3.30	1.63
O	5.39	1.95	4.74	1.84
Q1	3.00	1.22	2.74	1.32
Q2	5.22	1.52	5.26	1.57
Q3	4.74	1.32	5.43	1.54
Q4	5.30	1.10	3.83	1.39

a N:23

The results of the analysis of variance carried out on the data of Group III are summarized in Table VII. In this table the sums of squares, the degrees of freedom, the variance estimate for each source of variation, and the *F* ratios with the levels of significance are reported.

As with the previous groups, the simple interactions were tested against the triple interaction term. The "occasion-trait" estimate of variance gave an *F* ratio of 6.10/1.86 : 3.28 which, for degrees of freedom 15 and 330, is significant at the .001 level. Thus all of the traits were not affected to the same extent during the period studied. The "occasion-individual" component gave an *F* ratio of 2.84/1.86 : 1.53 which, for degrees of freedom 22 and 330, is not significant. The exceptions among the individuals tested with respect to trait consistency were not significant. Accordingly, trait consistency from one occasion to the next was for the group as a whole and individual exceptions to this were statistically unimportant. The "trait-individual" component gave an *F* ratio of 3.81/1.86 : 2.05 which, for degrees of freedom 330 and 330, is significant at the .001 level of confidence. As found with the two previous groups, intertrait variability is an individual matter and significantly so. Statistically reliable personality trait

Table VII.- Analysis of variance for 16 personality traits measured on 2 occasions for 23 individuals of Group III.

Source of variation	Sum of Squares	df	Variance estimate	F	Significance
Occasion (O)	21.23	1	21.23	11.05	.001
Trait (T)	551.40	15	36.76	9.65	.001
Individual (I)	108.86	22	4.95	----	----
Interaction: OxT	91.53	15	6.10	3.28	.001
Interaction: OxI	62.61	22	2.84	1.53	n.s.
Interaction: TxI	1256.88	330	3.81	2.05	.001
Interaction-triple: OxTxI	613.13	330	1.86	----	----
Total	2705.64	735			

differences were found to exist among the various members of the group.

The estimates of variance of the two main components tested both proved to be significant for this group. Since the "occasion-individual" component was found not to differ significantly from the triple interaction term, the sums of squares and degrees of freedom of each were combined to given an error term of 1.92 against which to test the level of significance of the "occasion" component. The F ratio for the "occasion" estimate of variance was 21.23/1.92 : 11.05 which, for degrees of freedom 1 and 352, is significant at the .001 level. Personality trait changes for the group as a whole were found. The "trait" estimate of variance gave an F ratio of 36.76/3.81 : 9.65 which, for degrees of freedom 15 and 330, is significant at the .001 level of confidence. Intertrait variability contributed in a significant way to the total variance.

In summary, the group as a whole changed from one occasion to the next, and there were no important exceptions to this among the individuals of the group. However, all of the traits were not affected in the same way, some being changed to a significant degree, others not. The group showed important differences from one trait to the next; however, these differences were not the same for all members

of the group. On the contrary, it was found that a significant number of the individuals differed from the group with respect to intertrait patterns.

Since it was found that the group as a whole varied in a systematic way between one occasion and the other, t ratios were computed to determine which traits had contributed in a statistically significant way to make the group on occasion 1 a different universe from that on occasion 2. The null hypothesis was advanced that no differences existed between the 16 traits as measured on occasion 1 and again on occasion 2. The hypothesis was then tested for each trait separately.

Following Garrett's[5] reasoning, the "occasion-individual" component, if significant, is the error term to be used to test the null hypothesis for each trait. Since this component was found not to differ significantly from the triple interaction term, the corrected estimate of variance used to test the "occasion" term is then the appropriate error term to test the null hypothesis for the individual traits. As stated above, this was found to be equal to 1.92. The standard error of the mean difference when computing t ratios from analysis of variance data is

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5 Henry E. Garrett, Statistics in psychology and education, 3rd edition, N. Y., Longmans, p. 262.

$\sqrt{2(\text{error term})/n}$ which in this case was $\sqrt{3.84/23}$ which is equal to .409.

The hypothesis of this research requires the study of personality trait changes in one direction only, either an increase or a decrease in manifestation of the traits, not simultaneous changes in both directions. This, then, is a one-tailed test and the t required for significance at the .01 level would be that which is required for significance at the .02 level in a two-tailed test.[6] For an n of 23, the t ratio which is significant at the .01 level in a one-tailed distribution is 2.50. With the standard error of the mean difference equal to .409, a difference between means would have be 1.02 or greater to be significant at the .01 level of confidence.

Mean differences exceeding 1.02 were found for three of the sixteen personality traits: "A", "[illegible]", and "Q4". Hence the null hypothesis was rejected for the differences between the means of those three traits but was accepted for the differences between the means of the remaining thirteen. The direction of change was the same in each case, lower scores resulting on the second occasion. Although the .01 level of confidence has been accepted in this study, rather than overlook other possibly real differences, it should be

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6 McNemar, op. cit., p. 112.

noted that an additional two traits, "C" and "n", showed changes significant at the .02 level of confidence. During the training period the mean "C" score increased while the mean "d" score decreased.

The interpretation of these changes will be discussed in the following chapter. The observation to be made here is that the group as a whole changed in a systematic way on three traits while remaining essentially the same on the other thirteen traits. Furthermore, the individual exceptions to the changes on these three traits were found to be statistically not important.

As an additional check on these results, t ratios between the traits were computed by the formula for differences between correlated means: $\bar{D}/\sqrt{S(D - \bar{D})^2/N(N - 1)}$. The results of this analysis were essentially in agreement with those of the analysis of variance. However, the t ratios obtained by the method of the differences between correlated means generally showed higher levels of significance than those obtained by the F test. This would be expected since the former test does not take into account the effects of interaction.

4. Analysis of Data of Group IV.

Group IV was tested initially at the level of first-year novitiate and again three years later at the level of second-year scholasticate. The means and standard deviations for each of the 16 personality traits as measured on both occasions are presented in Table VIII.

As with the preceding groups, the total variance of Group IV was analyzed into its constituent parts to determine the contribution of each part to the total. For this group the sums of the squares, the degrees of freedom, the estimate of variance of each component, and the F ratio with the level of significance are presented in Table IX.

Of the three simple interaction terms, two were found to contribute in a significant way to the total variance. The "occasion-trait" component gave an F ratio of 4.06/1.55 : 2.62 which, for degrees of freedom 15 and 225, is significant at the .001 level. Some individual traits were affected more than others and this was so to a significant degree. The "occasion-individual" component gave an F ratio of .81/1.55 which, being less than 1.00, is not significant. The exceptions among the individuals tested with respect to trait consistency were not significant.

Table VIII.- Means and standard deviations of the 16 personality traits on occasions 1 and 2 for Group IV.[a]

Personality trait	Occasion 1		Occasion 2	
	Mean	S.D.	Mean	S.D.
A	5.25	1.60	5.12	1.78
B	4.88	1.75	5.50	1.58
C	4.75	1.56	4.81	2.04
E	4.25	2.16	4.62	2.01
F	4.69	2.05	5.19	1.69
G	6.06	1.96	6.12	1.52
H	3.62	2.24	3.62	2.13
I	7.00	1.27	7.50	1.22
L	5.62	1.88	4.75	1.68
M	5.94	1.59	4.69	1.79
N	3.94	1.78	4.19	1.54
O	5.62	1.63	5.31	2.09
Q1	3.62	1.70	3.25	1.79
Q2	4.94	1.38	5.62	1.47
Q3	4.62	1.51	6.06	1.79
Q4	5.75	1.64	4.56	2.07

a N:16

Table IX.- Analysis of variance for 16 personality traits measured on 2 occasions for 16 individuals of Group IV.

Source of variation	Sum of Squares	df	Variance estimate	F	Significance
Occasion (O)	.08	1	.08	0.05	n.s.
Trait (T)	398.32	15	26.55	5.44	.001
Individual (I)	129.88	15	8.66	----	----
Interaction: OxT	60.98	15	4.06	2.62	.001
Interaction: OxI	12.17	15	.81	0.52	n.s.
Interaction: TxI	1097.68	225	4.88	3.15	.001
Interaction-triple: OxTxI	349.77	225	1.55	----	----
Total	2048.88	511			

Thus, trait consistency from one occasion to be next was for the group as a whole and individual exceptions to this were statistically unimportant. The "trait-individual" component gave an F ratio of 4.88/1.55 : 3.15 which, for degrees of freedom 225 and 225, is significant at the .001 level. The intertrait variability was found to be related in a significant way to the individuals who made up the group. A significant number of the individuals did not show the same intertrait patterns as did the group as a whole.

Of the two main sources of variance tested, only the "trait" estimate of variance was found to contribute in a significant to the total variance. The "occasion" component, using the corrected error term because the "occasion-individual" component had not reached the level of statistical significance, gave an F ratio of .08/1.51. Being less than 1.00, this is not significant. The group did not show systematic personality trait change from one occasion to the next. The "trait" component gave an F ratio of 26.55/4.88 : 5.44 which, for degrees of freedom 15 and 225, is significant at the .001 level. Variance between the 16 traits contributed a significant amount to the total variance.

For Group IV there were no systematic changes of the personality traits taken collectively for the group as

a whole. Although the particular traits studied were affected differently between the occasions studied, it could not be concluded that any single trait changed to a significant degree. It was determined thatindividual exceptions to these group findings were not statistically significant. As a group there were significant differences between the traits studied; however, the individual exceptions to these intertrait differences were also statistically significant.

5. Analysis of Data of Group V.

When tested initially, the members of Group V were at the second-year novitiate level; when tested the second time three years later, they were at the level of third-year scholasticate. The means and standard deviations of the sixteen personality traits measured on each occasion for this group are presented in Table X.

Analysis of variance was carried with this group as with each of the preceeding groups and the sums of squares, degrees of freedom, and the estimate of variance with the F ratio and level of significance are summarized in Table XI.

The "occasion-trait" term gave an F ratio of 3.71/1.74 : 2.13 which, for degrees of freedom 15 and 120, reaches the .01 level of significance. The individual traits were

Table X.- Means and standard deviations of the 16 personality traits on occasions 1 and 2 for Group V.[a]

Personality trait	Occasion 1		Occasion 2	
	Mean	S.D.	Mean	S.D.
A	5.33	2.32	4.78	1.12
B	5.89	1.72	6.33	1.57
C	5.22	2.62	5.67	.79
E	3.78	2.39	4.11	2.24
F	5.00	2.21	4.67	1.75
G	6.78	1.54	6.11	1.60
H	3.00	1.70	3.89	1.28
I	7.22	2.15	7.22	1.56
L	4.78	2.29	3.33	1.57
M	5.67	2.20	3.78	1.22
N	2.89	.99	3.11	1.53
O	5.67	1.93	4.11	1.37
Q_1	2.89	1.28	2.67	1.41
Q_2	5.22	1.55	5.67	2.04
Q_3	5.22	1.32	6.44	1.36
Q_4	5.33	1.71	4.22	1.69

a N:9

Table XI.- Analysis of variance for 16 personality traits measured on 2 occasions for 9 individuals of Group V.

Source of variation	Sum of Squares	df	Variance estimate	F	Signi-ficance
Occasion (O)	4.01	1	4.01	2.24	n.s.
Trait (T)	407.39	15	27.16	5.30	.001
Individual (I)	32.31	8	4.04	----	----
Interaction: OxT	55.56	15	3.71	2.13	.01
Interaction: OxI	20.68	8	2.58	1.48	n.s.
Interaction: TxI	614.80	120	5.12	2.94	.001
Interaction-triple: OxTxI	208.65	120	1.74	----	----
Total	1343.50	287			

affected in significantly different ways. The "occasion-individual" term gave an F ratio of 2.58/1.74 : 1.48 which, for degrees of freedom 8 and 120, is not significant. What happened to the group as a whole from one occasion to the next was true also of the individuals in the group. The individual exceptions did not reach the level of statistical significance. The "trait-individual" term gave an F ratio of 5.12/1.74 : 2.94 which, for degrees of freedom 120 and 120, is significant at the .001 level of confidence. This would mean that the intertrait variance was not the same for all of the individuals in the group. The individuals differed among themselves in a statistically significant way with respect to intertrait variability.

The "occasion-individual" component having been found to be statistically nonsignificant, the error term against which to test the "occasion" component was determined by combining the triple interaction and "occasion-individual" terms. The F ratio in this case turned out to be 4.01/1.79 : 2.24 which, for degrees of freedom 1 and 128, is not significant. The group as a whole did not change from one occasion to the next with respect to the traits studied. The "trait" estimate of variance gave an F ratio of 27.16/5.12 : 5.30 which, for degrees of freedom 15 and 120, is significant at

the .01 level. Intertrait variance contributed in a significant way to the total variance for this group.

This analysis indicated that Group V as a whole did not change in a systematic way from one occasion to the next with respect to the personality traits studied. Some of the traits changed more than others, but no trait could be said to have changed to a significant degree. There were no important exceptions to this among the individuals comprising the group. As with all of the other groups, there was a significant amount of intertrait variability and this variability was not the same for all members of the group.

6. Summary of Analyses of All Five Groups.

To summarize the results of the statistical analyses of all five groups, it was found that for only one, Group III, was there systematic personality trait change of the entire group from one occasion to the next. In this group three traits were affected, and the exceptions to this among the individuals comprising the group were not statistically significant. In all five groups it was found that variance between the traits contributed to the total variance in a significant way. However, it was also found for all groups that there was a statistically significant number of

exceptions to the group pattern of traits. It was found that for Groups I and II the "occasion-trait" variance did not contribute a significant part to the total variance, but that for Groups III, IV, and V this component did contribute in a statistically significant way. This means that for Groups I and II all of the traits were affected or not affected, as the case might be, in the same way, but for Groups III, IV, and V the traits measured were not all affected to the same extent. It should be noted that for the latter three groups the time element between test and retest was the same, three years in each case, while for Groups I and II the time element was one year and two years respectively. The final general result was that for no group was the "occasion-individual" component a significant source of variation. Thus there were no significant exceptions to group effects as far as the individuals comprising the group were concerned. What happened for each group as a whole, either personality trait change or none, was generally true for all of the individuals in that group.

The meaning of these statistical findings and the conclusions of this research are discussed in the following chapter.

CHAPTER IV

INTERPRETATION OF RESULTS

The problem investigated in this research was to determine if any of the personality traits as measured by the Cattell 16 Personality Factor Questionnaire would show a systematic change for a group of aspirants during the training period of a Roman Catholic congregation of teaching brothers. It was hypothesized that predictable personality trait changes would occur when a group of individuals were subjected to the relatively constant social forces involved in learning this particular occupational role. Constant social forces here meant that all individuals were subjected to similar training procedures while outside influences were kept to a minimum.

The problem had three significant ramifications: one in terms of adult personality change, a second in terms of vocational development theory, and a third in terms of vocational counseling. The experimental results as reported in Chapter III need now to be related to each of these three areas.

Of the five groups investigated in this study only one, Group III, showed systematic, group changes of any personality traits during the periods studied. This group

had been tested initially at the postulant level shortly after having entered the Congregation and again three years later when novitiate training had been completed and the scholasticate training begun. Thus, the entrance-exploratory stage had been completed and the acceptance-establishment stage begun.

Three of the sixteen personality traits measured showed statistically significant changes during the three year training period for Group III. On trait "A", "Cyclothymia versus schizothymia", the group moved in the direction of greater schizothymia. On trait "M", "Hysteric unconcern versus practical concernedness", the group moved in the direction of greater practical concernedness. On trait "Q_4", "Nervous tension", the group moved in the direction of less nervous tension.

Trait "A" is basically an interest-in-working-with-people versus a preference-for-working-alone factor. That a group of men in training to be teachers should move in a direction away from the desire to work with others is difficult to explain. Regression toward the mean did not seem to operate on the retest. Actually the group moved away from the population mean. It may be that the training these men received demanded more constant attention to self-scrutiny than they had been accustomed to on entry into the

Congregation and this led to some loss of interest in other people and a consequent increase in a withdrawal tendency.

Trait "M" measures the tendency to be somewhat bohemian and emotionally egocentric as opposed to being anxious to do the right thing. High scores reflect the bohemian attitude; low scores, the practical concernedness. The tendency of the group to become more concerned with correctness of behavior probably reflects the influence of training which strongly emphasized conformity to group mores.

Trait "Q_4" is a measure of nervous tension, nervousness as measured by this scale varying in a positive way with increase in score. The authors of the test suggest that the nervous tension measured by this scale is partly to be explained as a factor of sex deprivation with incomplete suppression[1]. It is of interest to note that Group III was slightly below the mean of the standardization group for this factor on the occasion of the first assessment, and there was a statistically significant decrease in the group mean on the occasion of the second assessment. Regression toward the mean could not explain this shift. It

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1 (no author), Handbook for the 16 P.F. Test, Champaing, Ill., Institute for Personality and Ability Testing, (no date), p. 8-11.

therefore would appear that there was a real reduction in nervous tension, and, if this tension is actually associated with sexual adjustment, it would appear that better sexual adjustment, at least in so far as this is reflected in nervous tension, occured during the training period. One possible explanation for this may lie in the fact that during this three year period contacts with the opposite sex are almost completely non-existent. With lack of contact there may be decreasing need for continued effortful suppression and consequently less tension. Another explanation is tenable. Since it was found that the group became more schizothymic during the training period, it may be that tensions were being resolved in fantasy.

None of the other thirteen factors showed statistically significant changes at the .01 level of confidence. Although this was the level of significance accepted in the present research, it is of interest to note that two additional traits showed changes at the .02 level of confidence. During the training period there was an increase in score on trait "C", indicating a tendency toward greater emotional stability; and a decrease on trait "H", indicating, as with trait "A", a withdrawal tendency and a decrease in interest in the opposit sex. The changes in both cases were away from the means of the standardization group, again suggesting

that regression toward the mean was not operating. The decrease in trait "H" would be consonant with the above interpretations for the decrease in trait "24". The "H" decrease partly reflected a decrease in interest in the opposite sex. It also partly reflected an increased tendency toward schizothymia. A causal sequence cannot be determined, but it is suggested that isolation might have led to decrease in interest in the opposite sex which in turn might have led to decrease in tension. An alternative suggestion is that the nature of the training led to an increase in fantasy satisfaction, resulting in a consequent decrease in tension.

The hypothesis advanced in this study stated that if social forces play an important part in personality development on the adult level, similar training experiences should lead to similar personality trait changes. This was clearly borne out with respect to the changes that took place with Group III. For the individual members of the group the number of exceptions to the trait changes that took place failed to reach the level of statistical significance. Thus the trait changes were systematic in the sense that they applied to the entire group. It might be argued that the simple passage of time could account for this change. However, the test-retest interval for Groups IV and

V was also three years and systematic changes did not occur for these groups.

Further research is needed to confirm this hypothesis, but it is suggested that the personality trait changes which were found to occur in Group III were associated with the unique experiences encountered during that particular phase of the training period. This group had completed the entrance-exploratory stage of postulancy and novitiate and had begun the acceptance-establishment stage in the sense that they had been allowed to make a temporary profession of vows. This profession of vows constitutes an external sign of mutual acceptance on the part of the aspirant and the Congregation, and from a psychological point of view involves a choice for the aspirant. The choice presumably extends beyond the external vows to include acceptance of the role of teaching brother as the aspirant then perceives it. Since that role includes the acceptance of celibacy, the lessening of sexual interest, at least during this period, would seem understandable. The decrease in nervous tension may also be associated with the simple fact of having made a vocational choice and having been accepted by the Congregation. This interpretation of the decrease in nervous tension is not inconsistent with the interpretation that the nervous tension decrease may have

been associated with decrease in sexual interest. On the contrary, since the choice of the role also necessitated a rejection of the opposite sex, the two may be interdependent. In either case it would appear that Super is justified in attributing significance to the importance of choice of role as a pertinent factor in his theory of vocational development.

That Groups I and II revealed no systematic personality trait changes from one occasion to the next may have been due to the fact that they had not yet learned the occupational roles as well as their more advanced confreres had. A complementary explanation seems equally plausable. It may have been that the situational demands during the first two years of training did not require significant personality trait change. These men had not yet made the choice to enter the acceptance-establishment stage. If this choice actually constitutes a critical situational determinant in acquiring the requisite behavior of the chosen role, one would be less likely to expect significant personality trait changes before it has been made.

Groups IV and V also failed to show systematic change in any of the personality traits that were assessed. Both of these groups had made the choice to enter the acceptance-establishment stage of training between the

initial and final assessment of personality. However, as noted in Chapter II, the individuals of Group IV had been in the Congregation for 1 year and those of Group V for 2 years before the initial testing. Furthermore, by the time of the final assessment three years later selection factors had probably been operating for both groups. This has already been pointed out in Chapter II where it was noted that the older individuals had either been dropped or sent out to teach. It would seem reasonable to expect that selection may have been associated with occupationally important personality trait criteria. Thus it could have been that those whose personality traits changed to conform with the role expectancy were those whose training was interupted to be sent out on a teaching mission. The effect on the group would be toward less indication of change than if they had been included.

An experimental finding of this study and one that applied to all five groups was that whatever occured to the group was true for all of the individuals in the group. It was found that among the individuals of the group the number of exceptions to group effects failed to reach the level of statistical significance for any of the five groups. Thus, though Groups I, II, IV, and V showed no personality trait changes from one occasion to the next, there were no

statistically significant exceptions to this among the individuals of the groups. This suggests that all of the individuals in each group were responding to the situational determinants of personality development peculiar to these periods of training in essentially the same way, in this case not to show significant personality trait change. Had there been individual exceptions, that would have been evidence for the possible operation of endogenous factors. That there was absence of significant personality trait change suggests the operation of both constant social forces within each group and constant endogenous factors within each individual. This would be consistent with the reasoning of both Anderson[2] and Anastasi[3] that restriction of environment by subjecting all constituent members to similar training influences should lead to reduction of variation of behavior.

Although there were no significant exceptions to the effects with respect to the individuals of the groups,

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2 John E. Anderson, "Freedom and constraint or potentiality and environment", Psychological Bulletin, Vol. 41, No. 1, January 1944, p. 1-29.

3 A. Anastasi, "Nature of psychological traits", Psychological Review, Vol. 55, No. 31, May 1948, p. 127-138.

the opposite was true with respect to the traits for Groups III, IV, and V. In Groups I and II the traits taken collectively showed no significant change for the periods studied, and among the traits there were no exceptions to this. A contrary condition was found to have occured in Groups III, IV, and V. In Group III, where the traits taken collectively showed a significant change, it was found that there were a significant number of exceptions to this. As pointed out above, at the .01 level of significance three traits changed while thirteen did not. This finding is consistent with Kelly's[4] conclusion that changes tend to be relatively specific rather than reflecting an over-all tendency to change. This finding would also be consistent with the hypothesis that occupational training is related to personality development. We would suggest as a possible explanation of this phenomenon that the individual, once having had sufficient opportunity to percieve the personality demands of the career, molds his behavior to conform with the perception of that role. It is suggested that when a sufficiently wide segment of behavior is involved, those personality traits

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4 E. Lowell Kelly, "Consistency of the adult personality", American Psychologist, Vol. 10, No. 11, November 1955, p. 659-681.

which embrace the given behavioral units will undergo gradual modification. There is some evidence for this even in the results that were found for Groups IV and V. It was found for these groups that the traits taken collectively did not show a significant change for the occasions studied. On the other hand, there were a statistically significant number of exceptions to this among the traits that were measured. In other words, there were differential effects on the 16 traits even though the effects were not sufficiently large to show up in the collective analysis. This conclusion takes on further significance when it is recalled that these effects were systematic in the sense that there were no statistically significant exceptions to them among the individuals of the groups. Thus, even though significant changes were not found for any traits in Groups IV and V, some of the traits had been affected in significantly different ways. Since this was found to be a systematic or group effect, it lends further support to the influence of occupational determinants in the development of personality.

Of particular interest in regard to theory of vocational development and of vocational counseling were the findings that all groups showed intertrait variability, and that there were statistically significant individual

differences among the members of each group with respect to that intertrait variability. It was not pertinent to this research to determine the pattern of personality traits as measured by the 16 P. F. Test for this Congregation of teaching brothers, but that each group showed intertrait variability is consistent with what has been found repeatedly in studies which have attempted to describe personality characteristics of various occupational groups. Some of these studies were reported in Chapter I.

Of both theoretical and practical significance was the finding that there were statistically significant variations among the individuals of each group with regard to intertrait variability. A significant number of individuals in each group did not show the same pattern of traits as did the group as a whole. This result adds further confirmation to the proposition of Super's vocational development theory that occupations have tolerances sufficiently wide to embrace some variety of individuals. The counseling implications of this are obvious.

In the following section these results are summarized and the conclusions are stated.

SUMMARY AND CONCLUSIONS

This research was carried out for the purpose of studying consistency of personality traits among a group of 81 young male adults who were preparing for the occupational role of a teaching brother in a Roman Catholic congregation of teaching brothers located in the eastern part of the United States. A longitudinal study was carried out in which the personality traits of these men were assessed on two occasions by means of the Cattell 16 Personality Factor Questionnaire. The test-retest intervals ranged from 1 to 3 years, and groups were assessed at each of three training levels of this congregation: postulancy, novitiate, and scholasticate.

It was hypothesized that certain personality traits would vary in systematic way during the training period in the sense that an entire group would change in a similar direction on those traits of significance to the particular occupational role being learned.

The problem of personality consistency as associated with occupational role was related to the broader context of personality development in the adult and to a theory of vocational development. Vocational counseling implications also were indicated.

The study was done with five different groups, each of which had completed different levels of training. Of

the five groups studied, one clearly demonstrated the tenability of the hypothesis. For this group it was found that 3 of the 16 personality traits measured changed to a significant degree between the occasion of the initial assessment on the postulant level and the occasion of the second assessment at the beginning of the scholasticate three years later. The number of exceptions to these changes among the members of the group failed to reach the level of statistical significance and thus gave further confirmation to the hypothesis that the changes would be systematic. That the changes tended to be specific to given personality traits rather than reflecting an over-all tendency to change was consistent with the conclusions of previous research. The changes that occured showed a tendency toward schizothymia, an increased concern with correctness of behavior, and a reduction in nervous tension. These changes were related to the situational demands peculiar to the learning of this occupational role.

None of the other four groups showed personality trait changes to a statistically significant degree. It was found, however, that each group responded in a systematic way, that is, that the number of exceptions to this consistency among the members of each group failed to reach the level of statistical significance. This was construed

to be further evidence for the conforming effects of similar training experiences. That this consistency may have reflected the effects of selection factors also was suggested.

Consonent with the findings of previous research, all five groups showed a significant amount of intertrait variability. Related to this was the finding that all members of each group did not show the same pattern of personality traits. This, too, confirmed previous research and was shown to be consistent with Super's theory of vocational development.

The results of this study are not without ambiguity; however, they do suggest that learning an occupational role is related to personality development in the young adult and that this is most clearly apparent in that stage of vocational development where the individual makes the choice to accept the occupation after he has had an exploratory period in which to try it out.

This research indicates the need for further study of the relationship between occupational role and personality trait consistency. There is need to determine if the conclusions drawn in this research would hold for other occupations. If the conclusions drawn here are correct,

one would expect that other occupations which involve critical choice stages and which have important ramifications on the total life sphere would result in personality trait change, and that the specificity of change would depend upon both the behavioral demands of the given occupational role and the individual's perception of those demands.

Another problem is also indicated by this research and the occupational development theory related to it. That systematic personality trait changes may occur after entry into an occupation is suggested by the results found here. However, it also would seem plausible to expect some personality trait change during the pre-entry stage when the individual aspires to a given occupational role and begins to build up a more or less definite perception of that role. Relatively little is known about the relationship of occupation to personality trait changes during this period of life. Research on these and related problems is needed for an understanding of personality development during the late adolescent and early adult years and for an understanding of the nature of vocational development.

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APPENDIX I

SUPER'S THEORY OF VOCATIONAL DEVELOPMENT[1]

The following are the ten propositions postulated by Super in his theory of vocational development.

1. Individuals differ in abilities, interests, and personalities.

2. They are qualified, by virtue of these characteristics, each for a number of occupations.

3. Each occupation requires a characteristic pattern of abilities, interests, and personality traits, with tolerances wide enough, however, to allow both some variety of occupations for each individual and some variety of individuals in each occupation.

4. Vocational preferences and competencies, the situations in which people live and work, and hence their self concepts, change with time and experience (although self concepts are generally fairly stable from late adolescence until late maturity), making choice and adjustment a continuous process.

5. This process may be summed up in a series of life stages characterized by those of growth, exploration, establishment, maintenance, and decline, these stages may in turn be subdivided into (a) the fantasy, tentative, and realistic phases of the exploratory stage, and (b) the trial and stable phases of the establishment stage.

6. The nature of the career pattern (that is, the occupational level attained and the sequence, frequency, and duration of trial and stable jobs) is determined by the individual's parental socio-economic level, mental ability, and personality characteristics, and by the opportunities to which he is exposed.

7. Development through the life stages can be guided partly by facilitating the process of maturation of abilities and interests and partly by aiding in reality testing and in the development of the self concept.

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1 D.E. Super, "A theory of vocational development", American Psychologist, Vol. 8, No. 5, issue of May 1953, p.185-190.

8. The process of vocational development is essentially that of developing and implementing a self concept: it is a compromise process in which the self concept is a product of the interaction of inherited aptitudes, neural and endocrine make-up, opportunity to play various roles, and evaluations of the extent to which the results of role playing meet with the approval of superiors and fellows.

9. The process of compromise between individual and social factors, between self concept and reality, is one of role playing, whether the role is played in fantasy, in the counseling interview, or in real life activities such as school classes, clubs, part-time work, and entry jobs.

10. Work satisfactions and life satisfactions depend upon the extent to which the individual finds adequate outlets for this abilities, interests, personality traits, and values; they depend upon his establishment in a type of work, a work situation, and a way of life in which he can play the kind of role which his growth and exploratory experiences have led him to consider congenial and appropriate.

APPENDIX 2

TRAITS MEASURED BY THE 16 PERSONALITY FACTOR QUESTIONNAIRE[1]

The high score is always represented by the label set at the left-hand side, while a low score corresponds to the opposite pole as represented by the right-hand label.

Factor A.- CYCLOTHYMIA VERSUS SCHIZOTHYMIA

Easy going	vs.	spiteful, grasping
Ready to cooperate	vs.	obstructive
Attentive to people	vs.	cool, aloof

Factor B.- GENERAL MENTAL CAPACITY VERSUS MENTAL DEFECT

Intelligent	vs.	unintelligent
Conscientious	vs.	somewhat unscrupulous
Persevering	vs.	quitting

Factor C.- EMOTIONAL STABILITY VERSUS DISSATISFIED EMOTIONALITY

Emotionally mature	vs.	lacking in frustration tolerance
Emotionally stable	vs.	changeable
Calm, phlegmatic	vs.	showing general emotionality

Factor E.- DOMINANCE-ASCENDANCE VERSUS SUBMISSION

Assertive, self-assured	vs.	submissive
Independent minded	vs.	dependent
Hard, stern	vs.	kindly, soft-hearted

Factor F.- SURGENCY VERSUS DESURGENCY

Talkative	vs.	silent, introspective
Cheerful	vs.	depressed
Placid	vs.	anxious

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1 (no author) Handbook for the 16 Personality Factor Questionnaire, Champaign, Illinois, Institute for Personality and Ability Testing, (no date), p. 6-11.

Factor G.- SUPEREGO STRENGTH VERSUS LACK OF INTERNAL STANDARDS

Persevering, determind	vs.	quitting, fickle
Responsible	vs.	frivolous
Emotionally mature	vs.	demanding, impatient

Factor H.- ADVENTUROUS AUTONOMIC RESILIENCE VERSUS INHERENT, WITHDRAWN SCHIZOTHYMIA

Gregarious sociability	vs.	shyness, withdrawing tendency
Adventurous, bold	vs.	cautious, retiring
Having marked interest in the opposite sex	vs.	slight interest in the opposite sex

Factor I.- EMOTIONAL SENSITIVITY VERSUS TOUGH MATURITY

Demanding, impatient	vs.	emotionally mature
Dependent, immature	vs.	independent minded
Imaginative, introapective	vs.	set and smug

Factor L.- PARANOID SCHIZOTHYMIA VERSUS TRUSTFUL ALTRUISM

Prone to jealousy	vs.	free of jealous tendencies
Placid, shy, bashful	vs.	composed
Suspicious	vs.	trustful

Factor M.- HYSTERIC UNCONCERN VERSUS PRACTICAL CONCERNEDNESS

Unconventional	vs.	conventional
Sensitively imaginative	vs.	practical, logical
Undependable	vs.	conscientious

Factor N.- SOPHISTICATION VERSUS ROUGH SIMPLICITY

Polished	vs.	clumsy, awkward
Cool, aloof	vs.	attentive to people
Fastidious	vs.	easily pleased

Factor O.-ANXIOUS INSECURITY VERSUS PLACID SELF CONFIDENCE

Anxious	vs.	placid
Worrying	vs.	tough, calm
Suspicious, brooding	vs.	given to simple action

Factor Q_1.- RADICALISM VERSUS CONSERVATISM

Factor Q_2.- INDEPENDENT SELF-SUFFICIENCY VERSUS LACK OF RESOLUTION

Factor Q_3.- WILL CONTROL AND CHARACTER STABILITY

Factor Q_4.- NERVOUS TENSION

APPENDIX 3

ABSTRACT OF

Personality trait consistency during the training period for a Roman Catholic congregation of teaching brothers.

The purpose of this research was to determine if personality traits, as these were measured by the Cattell 16 Personality Factor Questionnaire, would show systematic change during the training period for a Roman Catholic congregation of teaching brothers.

Personality traits of 81 young males of the same religious congregation were studied by the test-retest method at different levels of the training period, that is, between the postulant level and the final year of scholasticate. Personality trait consistency was assessed for the following periods of training: during the first year of training, during the first two years of training, during the first three years, for the period between the second and fourth years, and finally for the period between the third and fifth years of training. In all, five separate groups were studied, and the test-retest intervals for the groups ranged from 1 to 3 years.

Only one of the five groups, the one which was studied during the first three years of training, showed systematic personality trait changes. It was found that

this group became more schizothymic, more concerned about the correctness of behavior, and showed a decrease in nervous tension. These changes were related to the factors of choosing and learning the occupational role. Among the members of the group, the exceptions to group changes failed to reach the level of statistical significance. This confirmed the hypothesis that changes would be systematic in the sense of applying to the entire group.

Although none of the other four groups showed personality trait changes for the periods studied, it was found that the groups had responded in a systematic way. There were no statistically significant exceptions to the personality trait consistency. This was considered to be evidence for the conforming effects of the training experiences. The operation of selection factors also was considered.

It was found that there were differential effects on the traits measured, all of them not being effected in the same way. Thus, the idea of over-all tendency to change was rejected in favor of specificity of trait change. The specificity of change was related to the training experiences peculiar to this congregation.

Wide intertrait variability was found, and it was found that there were significant individual differences for that intertrait variability. Previous research had

indicated this to be an expected finding.

The findings of this research were related to personality development in the adult and to a theory of vocational development. Vocational counseling implications also were indicated.