

**A STUDY OF INTROVERSION-EXTRAVERSION  
IN COLLEGE STUDENTS**

---

**KAREN LOUISE HOCK**

A STUDY OF INTROVERSION-EXTRAVERSION  
IN COLLEGE STUDENTS

---

A Research Paper  
Presented to  
the Graduate Council of  
Austin Peay State University

---

In Partial Fulfillment of  
the Requirements for the Degree  
Master of Science

---

by  
Karen Louise Hock

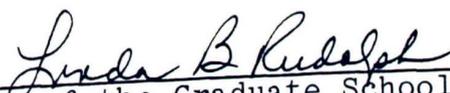
August, 1985

To the Graduate Council:

I am submitting herewith a Research Paper written by Karen Louise Hock entitled "A Study of Introversion-Extraversion in College Students." I recommend that it be accepted in partial fulfillment of the requirement for the degree of Master of Science, with a major in Psychology.

  
Major Professor

Accepted for the  
Graduate Council:

  
Dean of the Graduate School

## ACKNOWLEDGEMENTS

I extend my sincere appreciation to Dr. John D. Martin, Professor of Psychology, Austin Peay State University, for his continual support of me during my research; to Dr. Anthony Golden for allowing me time to spend in his undergraduate classes recruiting subjects for the present study; and to the graduate and undergraduate students who participated.

A very special thank you to my family for their support and encouragement throughout my graduate education.

## TABLE OF CONTENTS

|  | PAGE |
|--|------|
| LIST OF TABLES . . . . .                 | v    |
| CHAPTER                                  |      |
| 1. INTRODUCTION . . . . .                | 1    |
| 2. METHOD . . . . .                      | 7    |
| The Sample . . . . .                     | 7    |
| Description of the Instruments . . . . . | 7    |
| Administration and Scoring . . . . .     | 8    |
| 3. RESULTS . . . . .                     | 10   |
| 4. DISCUSSION . . . . .                  | 12   |
| REFERENCES . . . . .                     | 13   |

LIST OF TABLES

| TABLE   | PAGE |
|---|------|
| 1. Test Score Means, Standard Deviations,<br>Correlation Matrix and Probability<br>Matrix . . . . . | 11   |

## CHAPTER 1

### Introduction

The personality classifications of introversion and extraversion have been the topic of several research studies even before the terms were introduced in the psychological literature by Carl Jung in his Psychological Types (1924). Jung did not view introversion and extraversion as mutually exclusive categories, but as an orientation toward life. Although neither his approach nor his concept of introversion-extraversion is identical to Jung's, Hans Eysenck's research has in some respects affirmed Jung's categorization of internally and externally oriented people. According to Eysenck, an extravert is typically viewed as outgoing, impulsive, uninhibited, carefree, and easygoing. Such traits are typically manifested in the "outgoing uninhibited social proclivities" of a person (Eysenck, 1959). The extravert has many social contacts and enjoys group activities. Optimism, physical activity, and a tendency toward aggression and unreliability are also characteristics of an extravert.

On the other hand, Eysenck characterizes the introvert as a person who tends to be quiet and introspective. This person would prefer the enjoyment of reading a good book over interaction with people. Being more reserved, the

introvert is more distant socially and keeps feelings internal. In contrast to the extravert, the introvert is not aggressive, does not show a loss of temper, and is more reliable (Agnew, 1981).

A review of the literature revealed little or no research measuring introversion-extraversion in college students relative to age and gender differences. A survey of the literature did reveal, however, some studies comparing introversion and/or extraversion with such factors as locus of control, smoking, and homosexuality. In other studies, age and gender were only used as descriptors. A few studies where age and gender differences were relevant factors in the research are mentioned herein.

Hetzel, McMichael, and Kidson (1973) administered the Eysenck Personality Inventory (EPI) to 367 male and female college students from a total of 2031. Two and one half years later, the EPI was readministered to the same students. Relative to extraversion, no significant changes were found between male and female students at the first administration and no significant changes were reported two and one half years later.

Ronald Whittaker (1969) hypothesized a positive relationship between sex and extraversion for females. However, his empirical evidence failed to confirm the hypothesis.

Psychologists are familiar with many questionnaires and inventories published over the past thirty to forty

years, but only a very few of these are founded on factor-analytic research establishing the separate unitary traits or the dimensions of personality they claim to measure as functional wholes. The Contact Personality Factor (CPF), one of the instruments used in the present study, is integrally related to the whole area of research which has produced the adult Sixteen Personality Factor Questionnaire (16 PF), the High School Personality Questionnaire (HSPQ), the Motivating Analysis Test (MAT), and several other instruments shaped and validated with respect to factor-analytic and other experimental findings.

Long and time consuming, these questionnaires are intended for more comprehensive examination of the individual's personality than would be required for some situations. The forty item CPF scale is a more convenient device in that it is less time consuming than the entire 16 PF relative to the dimension with which the present study is concerned. The CPF measures exactly what is measured by the second-order extraversion factor found in the 16 PF scores. The score from the CPF, then, can be related to findings from the 16 PF, the HSPQ, and various objective tests of personality developed from the works of Cattell, Eysenck, Guilford, and others (Cattell, 1954).

The Contact Personality Factor was developed by Dr. Raymond B. Cattell (1954), a research professor in psychology at the University of Illinois. His research

and publications in the field of personality evaluation by factorial methods is world renown. Cattell isolated sixteen unitary, independent factors of personality. These are incorporated in his Sixteen Personality Factor Questionnaire (16 PF). The CPF refers to the extravert trait as the contact trait. It is used to indicate the amount of contact tendencies a person has. A scale from 9 to 1 is used to determine the amount of contact a person desires. A ranking of 9 indicates the person who enjoys the most contact. Such a person is overly enthusiastic, talkative, expressive, participating, assertive, adventurous, and uninhibited in emotional response. A person with the rank of 8 is quite similar, although not at such high strength or in such uncontrolled degrees. The person ranking a 7 begins enjoying some time away from social contacts, and a person ranking a 6 spends even more time alone. An individual ranking 5 is termed the "ambivert." This person likes both contact and non-contact situations. A ranking of 4 begins the ranks of those desiring less contact with people. A person ranking a 3 is the borderline introvert. Continuous social contact wears this person down. A rank of 2 definitely indicates introversion. A person with the rank of 1 is extremely withdrawn and self-sufficient. This individual tends to be melancholic, cold, stiff, depressed, withdrawing, and individualistic (Cattell, 1954).

The Personality Inventory, developed by Robert G. Bernreuter (1935), and the second instrument used in the present study, measures several aspects of personality simultaneously, with introversion-extraversion being one of them. Bernreuter describes an introverted person as one who is imaginative and tends to live within oneself. An extraverted person is described as one who rarely substitutes daydreaming for action.

Martsteller and Slocum (1972), in their research using the Bernreuter Personality Inventory, cited the following sources as instrumental in its development. Data used in selecting the items on the inventory were provided by the studies of Thurstone and Thurstone on emotional instability; Allport on ascendance-submission; Laird on introversion-extraversion; and Bernreuter on self-sufficiency. Miles has found the inventory independent of age and its scoring keys have been validated by Flanagan and Richardson and Hanawalt among others. Like the CPF, the Personality Inventory is useful in predicting the success of supervisors and in supervisory selection procedures.

The inventory lists six scales with the following characteristics:

- B1-N neurotic tendency
- B2-S self-sufficiency
- B3-I introversion-extraversion

B4-D dominance-submission (The items in this test are based upon the Ascendance-Submission Reaction Study by Gordon W. and Floyd H. Allport.)

F1-C confidence in oneself

F2-S sociability

The scale for introversion-extraversion, B3-1, is described as follows. Persons scoring high on this scale tend to be introverted. Scores above the 98 percentile bear the same significance as do similar scores on the B1-N scale. Those scoring low are extraverted (Bernreuter, 1935).

Whereas a review of the literature did not reveal previous research relative to the relationship of these two instruments, it was thought to be advantageous to ascertain the degree of relationship between them. Inasmuch as both the Contact Personality Factor scale and the Bernreuter Personality Inventory are claimed to measure introversion-extraversion, they should be positively related. It was, therefore, hypothesized that a positive and significant correlation should be obtained between the scores from those instruments.

## CHAPTER 2

### Method

#### The Sample

The sample consisted of 14 male and 26 female undergraduate and graduate students attending Austin Peay State University during the summer quarter of 1984. All subjects were volunteers. The graduate students were psychology majors, and most of the undergraduates were obtained by asking for volunteers from two lower division psychology courses. They were promised extra credit by their instructor for participation in this research. The ages ranged from 18 to 51 with the mean age being 28.

#### Description of the Instruments

Each subject completed both the Contact Personality Factor (CPF) and the Personality Inventory. As stated previously, the CPF was developed by Dr. Raymond Cattell and measures five basic personality factors. These were selected from sixteen basic personality factors because of their pertinence to the personality complex of introversion-extraversion. The factors are:

- Factor A: Reserved, Aloof versus Warm, Outgoing
- Factor E: Submissive versus Dominant
- Factor F: Sober, Serious versus Enthusiastic
- Factor H: Shy versus Adventurous

Factor Q2: Group Dependent versus Self-sufficient

The CPF has two forms (Forms A & B) available in order to obtain a more reliable measure of the contact trait. In the present investigation, however, only Form B was used. The test contains 40 questions. Thirty-four questions are personality factor questions and six are distortion questions. Because this instrument was designed for use in business and industry, and the applicants are usually motivated to show themselves in the most favorable light, a distortion or "lie" index was developed.

Dernreuter's Personality Inventory, as previously described, has six scales. Each scale may be scored separately or in any combination. However, only the scale for introversion-extraversion was used. The inventory consists of 125 questions which deal with a variety of topics that indicate personality traits and characteristics. This test has been used successfully with high school students, college students, and adults. Percentile norms have been prepared for each group.

#### Administration and Scoring

Because of the brevity of both instruments, they were administered at one setting. Most subjects were given the test in a group setting, although a few were tested individually because of scheduling difficulties. All subjects were given the same instructions. Confidentiality was assured and a means of receiving individual results

was given after completion of the tests.

Scoring of both tests was done manually according to the instructions included in the test packets. All tests administered were completed entirely, therefore, none were eliminated.

## CHAPTER 3

### Results

The Pearson product-moment correlation technique was used to analyze the data. No significant relationships were found between the CPF and PI, CPF and gender, and PI and gender.

The hypothesis that the Contact Personality Factor (CPF) and the Personality Inventory (PI) were measuring the same thing, namely introversion-extraversion, was not confirmed. In the relationship between PI and age, a significant (.05 level) negative correlation was found, thus showing that older subjects were more extraverted. Table 1 presents the test score means, standard deviations, correlation matrix and the probability matrix.

Table 1

Test Score Means, Standard Deviations, Correlation Matrix and Probability Matrix

| Variable | Mean    | Standard Deviation |
|----------|---------|--------------------|
| 1 CPF    | 34.975  | 5.221              |
| 2 PI     | -30.525 | 46.470             |
| 3 AGE    | 28.000  | 8.473              |
| 4 SEX    | 1.650   | 0.483              |

CORRELATION MATRIX

|   | 1       | 2       | 3       | 4       |
|---|---------|---------|---------|---------|
| 1 | 1.0000  | -0.1860 | -0.9232 | 0.0981  |
| 2 | -0.1860 | 1.0000  | -0.4136 | 0.2886  |
| 3 | -0.0232 | -0.4136 | 1.0000  | -0.1504 |
| 4 | 0.0981  | 0.2886  | -0.1504 | 1.0000  |

PROBABILITY MATRIX

|   | 1      | 2      | 3      | 4      |
|---|--------|--------|--------|--------|
| 1 | 0.0000 | 0.2493 | 0.8819 | 0.5538 |
| 2 | 0.2493 | 0.0000 | 0.0079 | 0.0676 |
| 3 | 0.8819 | 0.0079 | 0.0000 | 0.3569 |
| 4 | 0.5538 | 0.0676 | 0.3569 | 0.0000 |

## CHAPTER 4

### Discussion

The hypothesis of the present study stated that a positive and significant correlation should be obtained between the scores on the CPF and PI. This was presumed because of the fact that both instruments purportedly measure levels of introversion-extraversion. This hypothesis was not confirmed. Inasmuch as a review of the literature showed no previous research correlating the CPF and PI, it was thought desirable to determine to what extent the instruments were related.

Although not a hypothesis in the study at hand, the results indicated a moderate negative correlation between the PI and age. That finding suggests that the older subjects were more extraverted. It is suggested, furthermore, that the older subjects were perhaps more comfortable with themselves. They were well past adolescence and may be settled into family life and/or a career. Therefore, they may not be afraid to be out-going or open, and tend to enjoy more social contacts.

Introversion-extraversion has been studied extensively, however, not relative to age and gender exclusively. Further research might clarify those relationships.

## REFERENCES

- Agnew, W. S. (1981). Introversion as related to response time and accuracy, Unpublished master's thesis, Austin Peay State University, Clarksville, Tennessee.
- Bernreuter, R. G. (1935). The Personality Inventory. Palo Alto, California: Consulting Psychologists Press, Inc.
- Cattell, R. B. (1954). Contact Personality Factor Test. Champaign: Institute for Personality and Ability Testing.
- Eysenck, H. J. (1959). Manual of the M.P.I. London: University of London Press.
- Hetzel, R., McMichael, A. J., & Kidson, M. A. (1973). The Psychological health of university students as measured by a personality inventory. Australian and New Zealand Journal of Psychiatry, 7, 97-101.
- Jung, C. G. (1924). Psychological types. New York: Harcourt, Brace, & Co.
- Martsteller, R. A. & Slocum, J. W. (1972). Prediction of psychological need satisfaction. Training and Development Journal, 26(2), 50-59.
- Whittaker, R. D. (1969). A study of the relationship between neuroticism, extraversion, internal versus external control of reinforcement, sex, and grade

point average for a selected sample of the Florida  
State University students. Dissertation Abstracts,  
2, 1011-1013.