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PSYCHOLOGICAL TYPE ANALYSIS USING
 MYERS-BRIGGS TYPE INDICATOR OF AIR FORCE
 PERSONNEL UNDERGOING TREATMENT
 FOR ALCOHOLISM

THESIS

Michael R. Marquart
 Major, USAF

AFIT/GLM/LSM/86S-46

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THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Logistics Management

Michael R. Marquart, B.S.

Major, USAF

September 1986

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Abstract

This study applied the Myers-Briggs Type Indicator (MBTI) to 31 volunteer active duty Air Force members who had been medically diagnosed as alcohol abusers or problem drinkers. The MBTI is an operationalization of psychologist Carl G. Jung's theory of psychological types. The purpose was to determine whether it is possible to identify personality types of individuals with a predisposition to develop alcoholism. Participants were enrolled in out-patient treatment for alcoholism at the Social Actions facility at Wright-Patterson AFB from 1 May to 1 August 86. The sample was found to differ slightly from the general population because introverted, thinking and judging dimensions were overrepresented, but the differences were not statistically significant. Comparisons of sample data to MBTI data from a major study of civilian alcoholics likewise showed no statistically significant similarity of difference. The sample data also showed no statistically significant difference from the Air Force population in general. However, intrasample comparisons of alcohol abusers' and problem drinkers' MBTI preference scores showed a statistically significant frequency of slight type differentiation in one or more of the dichotomous scales within the sample alcoholics. Based upon these findings, alcohol abusers appeared to be characterized as preferring introverted and judging attitudes, and thinking as their auxiliary function. The study concluded that the MBTI could provide a possible method of identifying personality types of individuals who have a

predisposition to develop alcohol dependency. The method would be the identification of individuals whose MBTI preference scores indicate slight type differentiation in any of the primary dichotomies, particularly individuals whose attitude preferences are introversion combined with judging and whose auxiliary function is thinking.

PSYCHOLOGICAL TYPE ANALYSIS USING MYERS-BRIGGS TYPE
INDICATOR OF AIR FORCE PERSONNEL UNDERGOING
TREATMENT FOR ALCOHOLISM

I. Introduction

"We, of Alcoholics Anonymous, are more than one hundred men and women who have recovered from a seemingly hopeless state of mind and body" wrote the coauthors of Alcoholics Anonymous (3:xiii). "We are average Americans. All sections of this country and many of its occupations are represented, as well as many political, economic, social, and religious backgrounds" (3:17). To the widely held notion that alcoholism is the consequence of a long and varied drinking career, they responded, "To be gravely affected, one does not necessarily have to drink a long time nor take the quantities some of us have" (3:33).

The early work of people associated with A.A. ended the social stigma which labeled alcoholism as a moral deficiency or a lack of will power and led to the understanding that alcoholism is, in fact, a disease. Since the A.A. pioneers wrote their first book, alcoholism has been recognized by the American Medical Association as a disease which affects the individual mentally, physically, and emotionally. The disease concept is the prevailing view today and therefore contemporary treatment programs are designed to heal the whole person.

Background

This section introduces the Air Force's policy in alcohol abuse, defines pertinent definitions concerning alcoholism, and scopes the alcohol problem in Air Force and civilian life. It is followed by a statement of the research problem.

The Air Force Policy. The Air Force recognizes alcoholism to be a "progressive, noncompensable disease" affecting an alcoholic's entire family (10:11). Additionally, the Air Force recognizes alcoholism to be both preventable and treatable. Alcoholism is progressive in that it proceeds incrementally, increasing in severity. It is noncompensable in that alcohol's adverse effects cannot be remedied (10:11). The Air Force policy on its drug and alcohol abuse control program, published in Air Force Regulation (AFR) 30-2, states three key objectives:

. . . to prevent alcohol abuse and alcoholism among its personnel and their family members; to try to restore to full duty status persons with problems attributed to alcohol abuse; and to ensure the humane management and administrative disposition of those who cannot be or do not remain restored. (10:11)

Additionally AFR 30-2 states the following:

Air Force standards of behavior, performance, and discipline must be maintained. Determination that a member has failed to meet these standards must be based on demonstrated unacceptable performance and conduct, rather than solely on the use of alcohol.

Commanders must respond to unacceptable behavior or performance with the appropriate corrective actions.

Private drinking habits not affecting public behavior, duty performance, or physical and mental health are not of official concern. (10:11)

Definitions. A generally accepted definition for alcoholism/ alcohol abuse does not exist within the literature. For the purpose of this study, the definitions from Air Force Regulation 30-2 are used. The definition of alcohol abuse is as follows:

Any substandard behavior or performance in which the consumption of alcohol is the primary contributing factor, including but not limited to intoxicated driving, domestic disturbances, assault, diagnosed physical and psychological problems, etc. (10:12)

The term "alcohol abuse" includes two categories: the alcoholic (also termed "alcohol dependent") or alcohol abuser, and the problem drinker.

The first category requires a medical diagnosis of alcoholism using the following criteria:

Diagnostic Criteria for Alcohol Abuse

Pattern of pathological alcohol use. Need for daily use of alcohol for adequate functioning; inability to cut down or stop drinking; repeated efforts to control or reduce drinking by "going on the wagon" or restricting drinking to certain times of the day; binges (remaining intoxicated throughout the day for at least two days); occasional consumption of a fifth of spirits (or its equivalent in wine or beer); continuation of drinking despite a serious physical disorder that the individual knows is exacerbated by alcohol use; drinking of nonbeverage alcohol.

Impairment in social or occupational functioning due to alcohol use. For example, violence while intoxicated, absence from work, loss of job, legal difficulties (for example, arrest for intoxicated behavior, traffic accidents while intoxicated), arguments or difficulties with family or friends because of excessive alcohol use.

Duration of disturbance of at least one month.

Diagnostic Criteria for Alcohol Dependence

In addition to those criteria listed above for alcohol abuse either tolerance or withdrawal is required in making the diagnosis of alcohol dependence.

Tolerance. Need for markedly increased amounts of alcohol to achieve the desired effect, or markedly diminished effect with regular use of the same amount.

Withdrawal. Development of alcohol withdrawal (for example, morning "shakes" and malaise relieved by drinking) after cessation of or reduction in drinking. (10:27)

The second grouping is the problem drinker, which is defined as follows:

Problem Drinker

One whose nonpathological, recreational use of alcohol leads to unacceptable behavior as evidenced by an alcohol-related incident (or incidents) yet does not meet the diagnostic criteria for alcohol abuse or alcohol dependence. (10:12)

The definitions reflect a hierarchical relationship. The person who is dependent on alcohol would be expected to have the highest incident rate of problems associated with alcohol and, typically, a higher consumption level of alcohol. More often than not, the alcohol-dependent individual suffers from chronic symptoms, such as alcohol withdrawal, blackouts (memory lapses), and the inability to control his drinking, which are a serious impairment in the workplace, in family relationships, and to their health. Alcoholism is often manifested in problems with civilian and military law enforcement agencies. In contrast, the individual classified as a problem drinker or alcohol abuser generally has difficulties which are less severe and less chronic, without the blackout and withdrawal symptoms (4:3-5; 29:v-12).

Scope and Magnitude of Alcoholism and Alcohol Abuse. A Rand study conducted in 1979 suggested that 13.9% of Air Force personnel are affected by alcoholism (29:v). This study divided the affected Air Force population into two categories: alcohol dependent (4.6%) and adversely effected by alcohol (alcohol abusers and problem drinkers)

(9.3%). The study also concluded that the patterns and rates of alcoholic consumption are similar to those found in comparable civilian groups (29:v). Most recent statistics are found in the 1982 Worldwide Survey of Alcohol and Nonmedical Drug Use Among Military Personnel. According to the 1982 survey of Air Force personnel, 4.0% were alcohol dependent (down from 4.6% in 1979) and 9.6% were adversely affected by alcohol (up from 9.3% in 1979). A summary of the major findings for Air Force personnel is shown below (6:39,42,57,116,123).

The use of alcohol was almost universal--approximately 90 percent of the officers and 85 percent of the enlisted personnel consumed their alcoholic beverage of choice within the last 30 days.

The frequency of use was highest for field grade officers (O4-O6)--39.6 percent consumed primary beverage more than 10 days per month, then junior enlisted (E1-E5)--24.3 percent, followed by senior enlisted (E6-E9)--22.6 percent, and company grade officers (O1-O3)--19.7 percent.

The average daily consumption of 2 or more ounces of ethanol (about four drinks) was greatest for junior enlisted--18.6 percent, then senior enlisted--11.5 percent, field grade officers--9.1 percent, and then junior officers--4.8 percent.

The rates of alcohol dependency and affected by alcohol were as follows:

1. 5.4 and 12.9 percent for junior enlisted.
2. 2.2 and 6.0 percent for senior enlisted.
3. 1.5 and 3.0 percent for junior officers.
4. 0.3 and 2.5 percent for senior officers.

The survey compared the 1982 data with similar data from yet another worldwide study conducted in 1980 and found significant changes in Air Force mean daily consumption patterns. According to the 1982 survey, the percentage of Air Force personnel who consumed a moderate amount (one to four drinks) had increased since 1980. The 1982 survey also contained a comparison of the highest risk group (junior enlisted)

with their civilian counterparts and found junior enlisteds' use of alcohol in the past 30 days was significantly higher than in 1980 (6:189). A potential anomaly existed in the 1980 and 1982 worldwide survey data. Field grade officers, who had the greatest usage rate and frequency of use rate, were underrepresented in the percentages of individuals who were alcohol dependent or adversely affected by alcohol.

Air Force Regulation 30-2 details specific methods for identifying members with an alcohol problem. These methods, and percentages identified by each method, are shown below. Note that all methods are based upon the problem becoming manifest to such a degree that the individual or others could identify the alcohol problem.

1. Self-identification	16.8%
2. Command/supervisor	23.7%
3. Medical referral	3.9%
4. Driving while intoxicated (DWI)	35.8%
5. Nontraffic-related arrest	12.9%
6. Other	6.9% (2:16)

The Rand study, Effectiveness and Cost of Alcohol Rehabilitation in the United States Air Force, published in 1981 concluded that only one of the 10 Air Force personnel who are affected by alcoholism (all categories) were identified (28:vi). Air Force Military Personnel Center data on the Air Force Alcohol Abuse Program for fiscal year 1985 showed that 7,878 persons or 14 individuals per 1000 (1.4%) were participating in the alcohol abuse program. If the Rand estimate that only 1 in 10 was identified in fiscal year 1985, then approximately 71,000 personnel who were affected by alcoholism received no assistance. The 1981 Rand report recognized the importance of early

identification and recommended the Air Force take stronger measures to overcome the pressures which mitigate against timely identification of affected personnel (28:v-vi). Indeed, the Air Force has a major problem identifying individuals who have a predisposition to develop alcohol dependency.

Problem Statement

The Air Force draws personnel from a society in which alcohol use and abuse are widespread. The policy of the Air Force is to prevent alcohol abuse and to attempt rehabilitation of its members who are affected. However, the Air Force has a problem identifying its affected members before they have experienced the adverse consequences of alcohol abuse. In light of the problem that the Air Force has, and the impact on some of its members, the researcher believes that a different approach is needed in assessing the personality types of those who eventually present with drinking problems or alcoholism.

This research study addresses the following specific question: Is it possible to identify personality types of Air Force individuals who have a predisposition to alcoholism? It focuses upon the discovery and identification of personality types which have a higher ratio of alcohol problems.

Research Question

To evaluate if alcoholism is related to psychological type, the following investigative questions will be researched.

1. Do the psychological types of Air Force personnel undergoing alcohol rehabilitation treatment differ from those of the population in general?

H_0 : The distribution of psychological types of Air Force personnel undergoing treatment is the same as the psychological types of the general population.

H_a : Distributions are different

2. Are the psychological types of Air Force personnel who are receiving treatment for alcoholism different from those of civilians who are receiving treatment for alcoholism?

H_0 : The distribution of psychological types of Air Force personnel undergoing treatment is different from the distribution of psychological types of civilian individuals undergoing treatment.

H_a : Distributions are the same.

3. Are the psychological types of the Air Force personnel who are receiving treatment for alcoholism different from the general Air Force population?

H_0 : The distribution of psychological types of Air Force personnel in treatment is the same as the distribution of temperament types in the general Air Force population.

H_a : Distributions are different.

Assumptions

It was necessary to assume the personnel who participated in this study are typical of Air Force personnel who suffer from alcoholism. Because the number of respondents will likely be small, the researcher assumes that the inability to analyze across all personality types will not adversely effect the precision of the results. Further, the

sample participants were not selected at random. However, if necessary to conduct statistical tests, the researcher will assume the data are random.

A structural concern is that the comparison data sets could be biased. Nevertheless, the researcher assumes that the comparison data sets, which consist of civilian alcoholic groupings, Air Force general population groupings, and general population groupings, validly reflect the distributions of those groupings. Equally important, the researcher assumes that the demographics of each data or sample set are similar, so comparisons may be made. Additionally, the comparison data will be manipulated mathematically to facilitate comparisons between groups. The transposition of data is necessary to make some of the comparisons required to support some statistical tests. The assumption is the transpositions will not create a relationship which does not exist on its own merits.

Limitations

It was not possible to solicit respondents at random because the alcoholic subpopulation within any of the population groupings is unknown. The alternative, randomly administering the survey within the numerous Air Force treatment facilities, was constrained by both funding and time limitations. Consequently, statistical generalizations outside the survey populations are not possible. Further, of necessity the sample size is constrained by the number of members receiving follow-on treatment during May through July 1986 who consented to participate in this study. The small sample size, naturally,

limits the statistical tests that may be performed on the data and the power of the findings. Last, the survey participants were guaranteed anonymity, thus the researcher is constrained from ever releasing any data that would compromise the identities of the members who participated.

Summary

This chapter presented the problem of alcoholism in the Air Force and defined Air Force guidance on the identification of the alcohol abuser. The scope, magnitude and impact of alcohol abuse within the Air Force were discussed. The need for a method to identify individuals with alcoholic tendencies before the disease becomes disabling was presented. The research objectives and their related hypotheses were discussed. Last, the assumptions and limitations of the research effort were addressed. The next chapter provides a comprehensive review of the literature available on psychological types and relates it to research on alcoholism.

II. Literature Review

This chapter begins by introducing the reader to noted psychiatrist Carl G. Jung's theory of psychological types, which served as a foundation for the Myers-Briggs Type Indicator (MBTI). The section on Jung is followed by a discussion of the work by Katherine Briggs and Isabel Briggs Myers, which extended Jung's theory of typology both theoretically and practically and developed the type indicator as a psychological type measurement instrument. The discussion of the MBTI also includes areas in which the instrument has been used successfully, including the only published work based upon the use of the MBTI to type alcoholics. The literature review continues with a discussion of how poor or underdeveloped type development may affect the alcoholic and concludes with a brief section on recovery.

Jung's Theory of Psychological Types

General. From nearly twenty years of clinical observations, interactions with people of different social levels, and outside study in a wide range of topics from religion to mythology, Jung developed his theory of psychological types. Jung was often criticized by his contemporaries for using sources outside the treatment room, but they added a practical depth to his psychology, and he relegated them to a secondary role (12:126). Hall and Nordby wrote that his theory set out to transform "a general psychology of universal laws and processes into an individual psychology that described the unique characteristics and

behavior of a specific person" (12:96). Jung believed strongly that each individual's personality is unique. Although he concluded that an individual's personality is dependent upon inborn factors which develop within the normal person in an orderly, logical manner, he also believed that the individual's personality is influenced by environmental factors (12:96,106).

The Attitude Types—Extraversion/Introversion. Jung discovered a set of similar characteristics which were common to all of the people he had observed during two decades of clinical experience. He grouped the similarities by attitude and dominant functional type, thus pairing attitude with function to classify the psyche. Jung observed two opposite attitudes evident in people, the extraverted attitude and the introverted attitude. Attitude refers to the person's direction of interest, whether it is inward or outward oriented, focused upon a subject or an object, respectively. Functional type refers to the mental processes people use to acquire and give meaning to what they experience. There are four functions, two rational functions and two irrational functions. The two rational functions are thinking and feeling. The irrational functions are sensation and intuition. An individual's personality is described by one of the two opposing attitudes and one of the four functions--thus yielding Jung's grouping of eight general personality types. The uniqueness of the individual is preserved in Jung's belief that some of each of the opposing attitude or functions exist in all people to a greater or lesser degree.

Therefore, an individual personality can be broadly classified, but not precisely identified, using his typology.

Jung's belief that a dominant type is inborn in a person can be shown in the following excerpt from his writings.

In the same family one child is introverted, the other extraverted. Since the same facts show that the attitudinal type is a general phenomenon having an apparent random distribution, it cannot be a matter of conscious judgment or conscious intention, but must be due to some unconscious, instinctive cause. The fact that children often exhibit a typical attitude quite unmistakable even in their earliest years forces us to assume that it cannot be the struggle for existence in the ordinary sense that determines a particular attitude. Although nothing would induce me to underrate the incalculable importance of parental influence, this familiar experience compels me to conclude that the decisive factor must be looked for in the disposition of the child. Ultimately, it must be the individual disposition which decides whether the child will belong to this or that type despite the constancy of external conditions. (13:180-181)

Jung's recognition of the influence of environmental stimuli on the development of the individual psyche can also be shown. Hall and Nordby stated this quite succinctly, "The innate pattern [of attitudes and functions] is subject to modification by parental and other social influences" (12:106). A consequence of parental or societal influences; which are drastically opposed to or drastically alter the individual's inborn nature may be harmful and often lead to neurotic behavior in later life (12:106; 13:181).

Jung differentiated between the dichotomy of attitude--extraversion and introversion--on the basis of the individual's direction of orientation toward "the object" (13:178-179). The extravert's conscious orientation is said to be objective, which refers to the world around and outside the individual. For the extravert, "psychic energy

(libido) [not to be confused with Freud's concept, which only referred to sexual drive] is channeled into representations of the external world, and invests itself in perceptions, thoughts, and feelings about objects, people and animals, and other environmental circumstances and conditions" (12:97). Additionally, Jung believed that the unconscious attitude of the extraverted type has a definitely introverted character to complement the extraverted orientation of the conscious (13:187).

The conscious and unconscious attitudes of the introverted types are in direct contrast to those of the extravert. In the introvert's consciousness, "libido flows toward subjective psychic structures and processes" (12:97). At times, "the introvert interposes a subjective view between the perception of the object and his own action, which prevents the action from assuming a character that fits the objective situation" (13:229). The character of the introvert's unconscious, being opposite to his conscious, has an objective orientation and hence an extraverted quality. To give the reader a broader understanding of the introversion-extraversion dichotomy in less abstract terminology, a brief summary of Keirsey and Bates' ideas is presented. Keirsey and Bates stated the extraverted type appears to receive energy through his interactions with other people, which contrasts with the introverted type, whose energy is depleted by interactions with other people or stimulating environments. On the other hand, the introverted type receives energy from quiet, private places and solitary activities, which drain the energy of the extraverted type. This difference does not mean that the introverted type dislikes people or interacting with people, but only that these interactions reduce the introvert's

emotional energy reserves. Both the introverted type and the extraverted type have settings in which they thrive and settings in which they do not thrive. The introvert is a normal, albeit minority, type and his characteristic avoidance of group situations is not necessarily a reflection of a disdain for people (14:14-16). Because of his strong need for privacy, however, Kiersey and Bates believe the introverted type often is misunderstood by our predominantly extraverted culture.

In summary, the extraverted type's conscious attitude is objective and his unconscious attitude is subjective in orientation. While the introvert's conscious attitude is subjectively oriented, his unconscious attitude is objectively oriented. Whether an individual is classified as extraverted or introverted depends, therefore, on the observed predominant orientation of his consciousness. If the orientation is habitual and "orientation by the object predominates in such a way that decisions and actions are determined not by subjective views but by objective conditions" the individual is an extraverted type (13:182). An individual with habitually subjective orientation is, therefore, the opposite--an introverted type.

The Function Types--Irrational and Rational. The other major dimensions of Jung's typology are the functional types. The four functional types are sensation, intuition, feeling, and thinking. Jung believed that the "four functional types correspond to the obvious means by which consciousness obtains its orientation to experience" (12:99-100). He further categorized sensation and intuition as irrational functions and feeling and thinking as rational functions. The differentiation between rational and irrational is based upon the

premise that irrational functions do not require the use of reason and "are mental states that evolve from the flux of stimula acting on the individual" (12:99). More simply, the irrational functions are methods of perceiving or receiving information. Jung cautioned that the functions termed "irrational" should not be construed as contradictory to reason but rather as functions which do not possess reason. Hall and Nordby's statement supports this idea: "Sensation and intuition simply having nothing to do with reason. They are nonrational and nonjudgmental" (12:99)

Irrational Functions--Sensing/Intuiting. What, then, are the functions of sensation and intuition? Sensation and intuition are two different ways of perceiving information or stimulation. "Sensation is sense perception . . . produced by stimulation of the sense organs--sights, sounds, smells, tastes, and touch as well as sensations origination inside the body" (12:99). Intuition is ". . . an experience which is immediately given rather than produced as a result of thought or feeling" (12:99). An intuition can be also thought of as a spontaneous eruption of an idea. Intuition is often referred to as a "sixth sense" or "extrasensory perception" because it originates within the individual. It differs from sensation because the origin of an intuition and how it occurs is truly unknown. Both the sensation and intuition functions exist in all individuals--the key is that only one or the other will predominate.

Keirsey and Bates stated, "The two preferences of sensation and intuition are, of any of the preferences, the source of the most

miscommunication, misunderstanding, vilification, defamation, and denigration" (14:17). A person with a preference for sensation is typically described as practical, while an intuitor can be described as innovative. The sensor wants, needs, trusts, and remembers facts; the intuitor uses facts. A fact is a prized possession of the sensor; it can be an object, a relationship between objects, or an idea for the intuitor. The sensation type lives in the present, not worrying about what might have been or what will be; the intuitive type lives in anticipation of the possibilities of the future, somewhat bothered by present reality (14:17-19).

Rational Functions--Thinking/Feeling. The rational functions--thinking and feeling--also exist simultaneously within individuals. These functions shape judgments and operate in a mutually exclusive mode. Either one or the other will predominate. Both feeling and thinking are rational functions in that they require a judgment by the individual. Judgment in feelings is concerned with whether the "idea is pleasing or distasteful, beautiful or ugly, exciting or dull," while judgment in thinking is concerned with whether the connection between ideas is valid (12:99).

Hall and Nordby amplified Jung's thoughts about these rational functions by explaining that feeling is as an "evaluative function" which "accepts or rejects an idea on the basis of whether the idea arouses a pleasant or unpleasant feeling"; whereas thinking "connect[s] ideas with each other in order to arrive at a general concept or a solution to a problem" (12:99). Kiersey and Bates contrast thinking

and feeling as the basis for making choices or decisions. The thinking type chooses on an impersonal, objective basis, while the feeling type has a personal basis for choices. A misunderstanding of the opposite type usually occurs when people view one other from extreme positions based either upon all thinking or all feeling. Common misconceptions of the opposite type include: feeling types are "too soft hearted (soft-headed) . . . too emotional . . . illogical . . . fuzzy thinkers . . . and people who 'wear their hearts on their sleeves'" (14:12). Thinking types are "heartless . . . have ice in their veins [if they have veins, they obviously don't have hearts] . . . cold and remote" (14:20).

Characteristics of the Jungian Types. Jung's typology is based on combining the dominant attitude with the dominant function. Jung believed that this combination occurs in a generally predictable manner. The eight personality type combinations, with the first word giving the dominant attitude, and the second word giving the domination function, are as follows:

Extraverted Thinking--objectively oriented thinking, "thinking is oriented by the object and objective data" (13:192).

Extraverted Feeling--objectively oriented feeling, "the object being the indispensable determinant of the quality of feeling" (13:207).

Extraverted Sensation--objectively oriented sensing, "sensations are determined by the nature of the reality that confronts the individual" (12:101).

Extraverted Intuition—objectively oriented intuition, "seeking to discover the possibilities of every objective situation, and . . . continuously looking for new possibilities in external objects" (12:101).

Introverted Thinking—subjectively oriented thinking, "the subjective factor expresses itself as a feeling of guidance which always determines judgment"; "interested in ideas for their own sake . . . search the external world for facts to confirm ideas . . . deductive thinking" (12:100; 13:237).

Introverted Feeling—subjectively oriented feeling, "feeling which devalues the object"; "aroused by the internal or subjective conditions, especially primordial images . . . tends to be original, unusual, creative, and sometimes bizarre because it deviates from convention" (12:101; 13:245).

Introverted Sensation—subjectively oriented sensation, "sensation is related primarily to the subject and only secondarily to the object"; "perceptions are influenced by psychic states" (12:101; 13:253).

Introverted Intuition—subjectively oriented intuition, "unconscious images acquire the dignity of things . . . obtains little or no knowledge of the disturbances of innervation or of the physical effects produced by the unconscious images"; "moves from [mental] image to image"; "foresee[s] new possibilities in more or less clear outline . . . [a] prophetic foresight" (12:101; 13:259-261).

As is evident from the descriptions of the combinations of the attitudes with the functions, different personalities develop. Also, the hidden qualities which surround the introverted types make them

more difficult for the extraverted type to understand. The difficulty is possibly the result of the subjective orientation of the introvert, which is more complex because of its internal unconscious orientation.

Dominant and Auxiliary Functions. Within the framework of Jung's typology, there is the principal function described above and an allowance for an auxiliary function. According to Jung, the auxiliary function "is invariably present in consciousness and exerts a co-determining influence" (13:266). Jung believed the auxiliary function is always complementary to the primary function. To be complementary, the orientation and nature of the auxiliary function must be opposite to the orientation and nature of the dominant function. Jung stated,

This absolute sovereignty always belongs, empirically, to one function alone, and can belong only to one function, because the equally independent intervention of another function would necessarily produce a different orientation which, partially at least, would contradict the first. But since it is a vital condition for the process of adaption always to have clear and unambiguous aims, the presence of a second function of equal power (orientation) is naturally ruled out (13:266-267).

Additionally, he stated from his experience, ". . . the secondary function is always one whose nature is different from, though not antagonistic to, the primary function" (13:267). The following example clarifies the concept of a complementary auxiliary function. Assume an extraverted individual's dominant function is sensation. Possible auxiliary functions could be either feeling or thinking--and these would be in the opposite attitude, that is, they would be introverted, never extraverted in orientation or intuitive in nature. Jung

concluded, "Hence the auxiliary function is possible and useful only in so far as it serves the dominant function, without making any claim to the autonomy of its own principle" (13:268).

Myers' and Briggs' Extension of Jung's Psychological Type Theory

General. Isabel Briggs Myers and her mother, Katherine Briggs, used the distinction that Jung made between different ways of perceiving and judging to add a fourth dimension to the psychology of types. This fourth aspect, referred to as the judging/perceiving attitude, determines the observable differences in mental functioning and defines the relationship between the dominant and auxiliary functions. Another significant contribution to Jung's theory was creation of a procedure for determining the individual's preferred type with the MBTI, which gave broad practical applicability to Jung's typology (14:4; 24:xiii).

Myers and Briggs developed the following abbreviations to describe the types: E for Extraversion, I for Introversion, S for Sensing, N for intuition, T for Thinking, F for Feeling, J for Judging, and P for Perception.

Characteristics of the Types by Cognitive Styles. The groupings by cognitive style or mental processes suggested by Myers and Briggs, and their characteristics, are as follows:

ST, Sensing plus Thinking. Individuals who rely on facts collected by the senses and approach decisions impersonally through reasoning from cause to effect. Tend to have practical and matter-of-fact personalities (24:5).

SF, Sensing plus Feeling. Individuals who rely on facts collected by the senses and approach decisions personally using their own value system. Tend to have social and friendly personalities. (24:5-6)

NT, Intuition plus Thinking. Individuals who use intuition teamed with thinking to focus on possibilities and approach them with impersonal analysis. Tend to be logical and ingenious. (24:6-7)

NF, Intuition plus Feeling. Individuals who possess the same personal warmth as SF types but are interested in the possibilities of ideas. Tend to be enthusiastic, insightful, and committed to pursue an idea. (24:6)

Judging/Perceiving Preferences. Myers and Briggs believed that people have a natural preference for either a judging or perceiving style, as is true with the attitudes and functions previously characterized. They describe this choice of judging or perceiving as "a way of life, a method of dealing with the world around us" (24:8).

Perceiving, denoted by the letter P, includes the methods of "becoming aware of things, people, occurrences, and ideas"; while judging, denoted by the letter J, is the "process of coming to conclusions about what has been perceived" (24:1). Thus perceiving and judging functions are analogous to Jung's concepts of irrational and rational functions, respectively. Additionally, Myers and Briggs theorized, if an individual's perceiving and judging functions were combined, then the combination of functions would make up, in large portion, an individual's mental activity or cognitive style. The individual's cognitive style would govern the person's behavior (24:1-2).

Jung addressed the individual's use of judgment and perception, however, as Keirse and Bates point out, "just what Jung meant by

'judgment' and 'perception' was not at all clear" (14:23). They describe this dimension with the idea that the judgmental individual seeks closure, while the perceptive individual tends to hold choices in abeyance (14:24). They related a work ethic to the J type individual and a play ethic to the P type individual, where the J type must finish his work before he plays, and the P type individual may play before, during, or after his work. Additionally, they contrast perceiving and judging individuals as process- versus outcome-oriented (14:24). Myers suggested J type individuals prefer life when it is decided or when things are settled; whereas P type individuals regard life as something to be experienced, preferring to keep their options as open as possible (24:69).

Dominant and Auxiliary Functions. Myers and Briggs developed and tested a way to determine this fourth factor, thereby explaining some significant individual differences among individuals who, in Jung's typology, had the same type. Recall that Jung grouped individuals by dominant attitude and dominant function, and that he postulated the presence of an auxiliary function, which was opposite in attitude and nature, in all individuals. This means that an individual's dominant function would be complemented by an auxiliary function. The auxiliary function would provide the individual with either a method of receiving information or of making decisions based upon the information gained. For example, from Jung's groupings, an Introverted iNtuitive type could have an auxiliary function of either "extraverted thinking" or "extraverted feeling." One would reasonably expect the observed behavior

of these two possible combinations to differ, because an individual with "thinking" as his judging function would use his reasoning powers as he sifts through the inputs from his intuition, while the individual with "feeling" would use his value system in sorting the realities presented by his intuition.

Table 1 shows a comparison between Jung's groupings and Myers-Briggs groupings. Determining the dominant and auxiliary function of an Extravert using the Myers-Briggs Type Indicator is easier than determining them in an Introvert because the introvert's dominant function is hidden. Introverts deal with the world in the mode of their auxiliary function. Using the MBTI types from Table 1, one need only look at the fourth letter to see which function is preferred by the Extravert, with the other function being the auxiliary. For example, for an ESTJ, the fourth letter "J" points to the Judging function as dominant, in this case "T" for Thinking, with the remaining function, "S" for Sensing, as auxiliary. This relationship holds for all extraverted attitude types. However, for an ISTJ, for example, the "J" points to the extraverted function as "T," and this is the introvert's auxiliary. The ISTJ's dominant function is "sensing," the other element in the function pair.

Characteristics of the Types. Table 2 shows general characteristics of four types to illustrate how Jung and Myers differentiated among the types. Neither Jung, nor Myers and Briggs, nor Keirsey and Bates, advocated one best type. As Keirsey and Bates wrote, "People are different in fundamental ways, . . . we do violence to others

Table 1
 Comparison Between Jung and Myers-Briggs
 Personality Types

Jung's Types Function	Myers-Briggs Types	Dominant/Auxiliary
Extraverted Thinking	ESTJ ENTJ	Thinking/Sensing Thinking/iNtuitiOn
Introverted Thinking	ISTP INTP	Thinking/Sensing Thinking/iNtuitiOn
Extraverted Feeling	ESFJ ENFJ	Feeling/Sensing Feeling/iNtuitiOn
Introverted Feeling	ISFP INFP	Feeling/Sensing Feeling/iNtuitiOn
Extraverted Sensing	ESTP ESFP	Sensing/Thinking Sensing/Feeling
Intraverted Sensing	ISTJ ISFJ	Sensing/Thinking Sensing/Feeling
Extraverted Intuition	ENTP ENFP	iNtuitiOn/Thinking iNtuitiOn/Feeling
Intraverted Intuition	INTP INFJ	iNtuitiOn/Thinking iNtuitiOn/Feeling

(13; 24)

when we assume their differences to be flaws and afflictions" (14:2-4). The ESTJ and ENTJ types both have thinking as their dominant function but are differentiated in their auxiliary function. Although similar, each uses a different perceiving process, which is manifested in the ESTJ being interested in the factual reality of things and the ENTJ in the possibilities available in ideas about things. The ESTJ

Table 2

Representative Characteristics of ESTJ, ENTJ,
ISTP, and ESTP Personalities

<u>ESTJ</u>	<u>ENTJ</u>
Looks at things with sensing, more interested in the realities perceived by the five senses. Typically, are matter-of-fact, practical, realistic, concerned with the present reality. Curiosity stimulated by new things. Desire ideas, plans, and decisions to have a factual basis. Problem solving based on applying and adapting past experience. Prefer work experiences with immediately, tangible results. Do not use intuition very well; tend to need an intuitive to sell them on new ideas.	Looks at things intuitively, mainly interested in the possibilities beyond what is presently or obviously known. Heightened intellectual interests, curiosity for new ideas, tolerance for theory, taste for complex problems, insight, vision, and concern for long-range consequences. Prefer jobs which have problems to solve and like to find new solutions. Interested in the big picture, not the detailed procedures or facts. Tend to need sensing types to keep them from overlooking relevant facts and important details.
<u>ISTP</u>	<u>ESTP</u>
See reality and have a great capacity for facts and details. Capable of using general principles to order confusing data and to give meaning to unorganized facts. Typically patient, accurate and manually dexterous. Interested in sports and outdoors, and have a gift of fun. Believers in economy of effort which is an asset when they correctly gauge the effort required, otherwise their economy of effort becomes laziness and little is accomplished.	Accept and use the facts around them, using thinking to make decisions. Aware of the logical consequences of their acts or decisions. Thinking gives them a grasp of underlying principles. Strong in the art of living. Usually open-minded, patient, easygoing, and tolerant of everyone. Appreciate material possessions and spending time to acquire and preserve them. Do not use intuition very well. If their judgement is not well developed, may become lazy, unstable, and shallow.

(22:7-10,16; 23:20-23,26)

also appears concerned with the short-range solution of problems based upon his experience, while the ENTJ is more creatively looking for longer term solutions (23:22).

In contrasting the characteristics of the ESTJ and ISTP, one may see the differences that result from opposite attitudes operating with the same functions. Where the ESTJ's dominant extraverted thinking is shown in his ability to organize people and things, the ISTP's introverted thinking is used in analysis and in his ability to organize ideas and facts. Both types tend to be logical, critical, impersonal, and influenced primarily by reason in their judgement. Where the ISTP's personality would be expected to be quiet, reserved, and shy (except to their best friends), the ESTJ would like a take-charge attitude. For both types, feeling is the least developed function. The ISTP needs to ask what matters emotionally, while the ENTJ probably needs to learn to appreciate other people's merits (23:22-23).

The ESTJ and ESTP types both have the same cognitive style, only with opposite dominant and auxiliary functions. Whereas both tend to be realistic, the ESTP accepts and uses facts good-naturedly, while the ESTJ uses facts with analytical precision. The ESTPs are generally adaptable to situations, "unprejudiced, open-minded, and usually patient, easygoing and tolerant of everyone" (23:22,26). In contrast, ESTJs typically have "little patience with confusion, inefficiency, halfway measures, or anything aimless and ineffective" (23:22,26). Additionally, the ESTP may be hesitant in making judgments, delaying to get more information or more simply avoiding decisions; the ESTJ, on the other hand, may judge too hastily, often

without regard for other people's feeling and without enough information (23:22,26).

Psychological Type and Alcoholism

Although alcoholism and personality have been studied exhaustively (1; 9; 18; 21; 34; 36; 37), Majors describes these approaches as inadequate.

Psychological testing has played an important and prolific role in alcoholism-related research, but the overall results, through heuristic and suggestive, have been rather inconclusive, equivocal and contradictory. (19:1)

Additionally, existing tests appear to have been designed to confirm clinical diagnoses of alcoholism and to treat pathologically affected individuals based upon their differences from normal behavior, rather than to give a warning indication that prevention may be required.

If a reliable, practical method could identify individuals with a predisposition to alcohol problems, then precautionary measures could be taken to lessen the adverse effects on the individual. Central to the idea of early identification of alcoholism is the concept of using a psychometric tool based on individual personality characteristics which are stable before and after the disease progresses to its later stages. The MBTI describes inherent or inborn dispositions to personality characteristics and, thus, the personality characteristics measured are stable. As a result, the researcher chose to apply the MBTI, which takes a comprehensive approach to psychological type rather than pathological personality traits, to determine whether this

instrument would permit early identification of factors which are present before the disease becomes disabling.

A thorough search of the many data bases available revealed that researchers are just beginning to apply the MBTI to the problem of alcoholism. Consequently, many of the suggestions relating psychological type to alcoholism advanced herein are logical inferences based upon what theory is available rather than field or laboratory research. There is, however, a growing awareness of the richness offered by the Jungian and Myers-Briggs typology among those whose field is the treatment of alcoholism and its various related disorders, and it seems probable Jung's typology will be exploited in the future (17:61).

Research relating Jung's theory of psychological types or the MBTI to alcoholism is in its infancy. Jung, himself, was aware of the alcoholic over the course of his clinical experience, and Roland H., an early member of Alcoholics Anonymous, consulted Jung for treatment of his alcoholism (3:26). In his discussion of the extraverted type, Jung specifically mentions alcoholism, "Or a man who can no longer carry the weight of the huge business he has built up is afflicted with nervous attacks of thirst and speedily falls a victim to hysterical alcoholism" (13:186). There is no other mention by Jung linking alcoholism to his theory within "Psychological Types" (13).

One clinical application of the MBTI to alcoholics and their immediate families is described by researcher Marthanne Luzader (17). Luzader administered the MBTI to 596 participants, composed of recovering alcoholics and substance abusers and their families, in the Renaissance Outpatient Program of Shoal Creek Hospital in Austin,

Texas. Results were compared to Center for Applications of Psychological Type (CAPT) data bases for males and females to determine respective representation of those types undergoing treatment versus the general population. Summary data from that test show male abusers to be concentrated within the introverted types, particularly IN, IJ, IS and IP types (excluding ISFP) (17:60). Results point to overrepresentation among the males in INFP, INTJ, and ISTJ types, and possibly INFJ, ISFJ, INTP and ISTP types (17:60). Among the females, introverted types (and, to a lesser extent, intuitive types) also were overrepresented, but less so than the males (17:60). According to Luzader's findings, female abusers were concentrated within the INTP, INFP, and ENTP types (17:60).

A fairly common thread among all comparisons was the presence of Judgment (J) as a fourth-character indicator (17). This is the individual who presses for closure in the elements of his life, perhaps leading to the characteristic control or "strong power motivation" frequently noted among alcoholics (21:1006). Yet other applications of the MBTI within the behavioral sciences have associated introversion with competitiveness (15:976); and judgment with control (16). These two descriptors have been identified in many of the personality type tests used extensively in studies of alcoholics (9; 18; 35; 37). Other published research using the MBTI found only one introverted type, the ISFJ, significantly overrepresented among alcoholics, but also noted trends toward S and SJ (17:61). In one sample of alcoholics, O'Hara found low relative frequencies of SFs, which Luzader found as well (17:61).

Just why these types occur with more frequency among alcoholics and substance abusers is a matter of conjecture, particularly in light of searching for an indicator of the prealcoholic (9; 37). The fact is, not all introverted or intuitive types are abusers, and the same is true of the judging types. All that is known to date is that these types are statistically overrepresented among the populations of alcoholics that have been studied, and these same characteristics are documented by other test instruments (18; 37). Interestingly, Luza-der's study provides one intriguing clue, noted by the subjects themselves:

Abusers commented in various ways that they became extra-verted after drinking. One who drank to become more extra-verted wondered if his type would change after he'd been dry awhile. A male INFP said, "When I'm in a conflict situation, I internalize my feelings. When I could not handle the pain that resulted, I would drink. Another male INFP substance abuser explained the large percentage of I's as obvious. He said, "It's the inner world that chemicals change." (17:61)

It is well documented that the introverted and intuitive types are minorities in the population (13; 14; 23; 24; 25). Jung noted the introverted type is frequently misunderstood and misinterpreted, which could cause the individual to experience emotional pain (13:230-235). Likewise, the intuiting type, in perceiving things differently from those around him who are proportionately more sensing types, could decide his perceptions are invalid. If these types are also combined with judging, in their desire to define their experience, they could conclude their difference to be a defect. Myers supports the assertion that the alcoholic may experience his minority status as an abnormality

during the years when his type is developing, rather than as a legitimate difference cherished by those who are important to him.

Unless the introverts with intuition are stoutly skeptical of the mass assumption that a difference is an inferiority, their faith in their type will diminish. They will not trust and exercise their preferences, which accordingly, will not be developed enough to be beneficial. (24:191)

As he reaches adulthood, the introverted and intuitive types could become more acutely aware of their distance from most people. the result would be pain in some, or the characteristic rebelliousness spinging from denial noted in others, or both (21:1006; 37). Alcohol then, would become a way of putting out the pain, a means of entering the extraverted world and becoming socially acceptable, or exiting the arena of pain entirely (21:1006).

To determine whether these suppositions are possible, the researcher investigated Myers-Briggs' theory on type development in the context of the literature written on adult children of alcoholics, a subgroup of the alcoholic population which is more likely to become alcoholic themselves, or marry alcoholics, or both (5; 11; 36). One can use the adult children of the alcoholic's group to develop a theory that embraces psychological type development, and then reason forward to a possible consequences, such as becoming an alcoholic, or back to conditions that may have been present in the adult alcoholic's life. Thus, a clue to a prealcoholic condition, which has confounded researchers of alcoholism to date (9; 37), could be found.

Type Development

Type development is a dynamic process and the result, if the child is nurtured, is an adult with good type differentiation and skills

(24:181). However, if a child is prevented from developing his natural preferences, the result in the adult is not so good. According to Myers, "Different types are likely to go wrong from different angles" (24:181), and the angle could be alcoholism in some types. Because research has not yet clearly related type development to alcoholism, the literature cannot present a causal link between poor type development and later alcoholic behavior. However, much of the literature written for and about adult children of alcoholics discusses the dysfunctional family environment in which such children are raised (5; 11; 36). When integrated with Myers' assertions on the dynamics of type development, it presents a possible explanation for the development of an alcoholic.

A dysfunctional home has a distinctive character. Family life is "inconsistent, unpredictable, arbitrary and chaotic" (11:9). Additionally, the home life is marked by turmoil caused by the adults.

For example, if I am the child of an alcoholic, my mother might be the most loving, wonderful woman when she is sober, but just the opposite when she is drinking. I cannot be sure which person I am going to meet when I come home. Children of alcoholics learn specific lessons from this.

They learn to repress spontaneity, to first check things out to see if their parents are sober, and how to shrug off disappointment. There is a whole set of behaviors and attitudes a child develops and carries into adult life as a result of such lessons. . . . Chaos is the natural result. Include in this picture the certain emotional abuse, as well as the potential for physical or sexual abuse and you can see that life in an alcoholic home is like living with an accident every day. (11:9)

Because of the chronic denial that there is a problem in such a home, a child is taught to "disown" his perceptions and experiences (11:19). According to Gravitz and Bowden, researchers on the adult

child, "First and foremost. . . . children's perceptions of what is happening become progressively and systematically negated" (11:19). The child, attempting to make sense of such an unstable world, eventually concludes he is crazy, unlovable, and guilty (11:21).

It is easy to forget how profound the parent-child relationship is. Children are completely dependent upon their parents' good will and nurturing. Parents are the people who make it possible, literally, to stay alive. . . . Parents are also a primary source of a child's sense of self worth. When the people who love them the most hurt them the most, children often conclude that there must be something dreadfully wrong with them. . . . In this way, children of alcoholics learn to distrust both themselves and others. They learn to endure, to suffer, and to resent. they survive by distancing themselves from their feelings and denying their needs. . . . Instead, children in families of alcoholics learn to control; they learn to pretend. . . . As a result, they learn to blur, distort, and confuse. . . . Just as alcoholics blur their view of the world due to alcohol, children blur the boundaries of feelings, thoughts, and behaviors due to the alcoholism of the parents. (11:22)

Myers identifies five obstacles to type development as environmental pressures, lack of faith in one's own type, lack of acceptance at home, lack of opportunity, and lack of incentive (24:189-192). Compare the description of a dysfunctional home environment with Myers' discussion of three of these obstacles: environment, lack of acceptance at home, and lack of opportunity.

. . . when an environment, squarely conflicting with their capacities, forces children to depend on unnatural processes or attitudes, the result is falsification of type, which robs its victims of their real selves and makes them into inferior, frustrated copies of other people. The greater the original possibilities, the greater the frustration and strain of unfillment. Jung says that "as a rule, whenever such a falsification of type takes place as a result of external influence, the individual becomes neurotic later. . . . A reversal of type often proves exceedingly harmful to

the physiological well-being of the organism, often provoking an acute state of exhaustion." (24:189)

If parents understand and accept their children's type, the children have a spot of firm ground to stand on and a place in which to be themselves. But if children suspect that their parents want them to be different--to go against their own type--then the children lose hope. (24:191)

A more obvious hindrance to development is simple lack of opportunity to exercise the favored process or attitudes. Unknowingly parents frequently refuse their children the conditions necessary for good type development . . . (24:191)

Myers postulated that the strengths of a type emerge only when a child's type is fostered into adequate development, and this requires the cooperation and assistance of consistent parents who permit the child the opportunity to grow, and a stable environment (24:176-191). However, as has been illustrated, the child in a dysfunctional home is denied the opportunity and the environmental and home conditions necessary to develop his innate type (5; 11; 36). Consequently, a child of a dysfunctional family experiences little encouragement to achieve maturity (26:194). Further, if that child is also a minority type, he may experience lack of faith in his own type (24:190). Because the pressures against good type development are abundantly present for the child of an alcoholic, good development of his type would be controverted. According to Myers, the result is individuals "likely to have the characteristic weaknesses of their type, but not much else" (24:181). In some types, this characteristic weakness may be a tendency toward alcoholism.

Type development proceeds sequentially from infancy through young adulthood, beginning with the preference for extraversion or introversion, and proceeding through perception to judgment, which is the last

and most difficult ability to blossom in the youngster (24:177-180). In her studies, Myers documented poorly differentiated perceptual and judgment processes as indirect indicators of immaturity and lack of achievement (24:178-179). Myers says, "in the least-developed adults, the processes remain childish, so that nothing can be maturely perceived or maturely judged" (24:183). As has been discussed, children in dysfunctional homes are taught to deny their perceptions, reasoning and feelings (11:22). Thus, development of perceptual and judging skills, and the requisite trust in them needed to develop ability, is denied the child. Therefore, poor differentiation of sensing-intuiting, and thinking-feeling, could be a characteristic of the adult child, and could be discernable by using the MBTI (24:178-179).

As a consequence of poor or underdeveloped type differentiation, the judging and perceiving process are feeble (24:183), perhaps giving rise to what research in alcoholism has described in some alcoholics as immaturity (9; 30; 35; 37). Mental confusion would exist because the perceiving processes and the judging processes would be confounding themselves and each other (13:267-269; 24:184-186). In all, the outcome of a child attempting to achieve maturity in a dysfunctional home would resemble Myers' description of discouraged children, which may lead to the final obstacle to good type development--lack of incentive:

What had seemed to be only a child's refusal to try to meet relatively simple requirements of home and school can become a devastatingly complete inability to meet the demands and responsibilities of adult life. (24:194)

Could this manifest itself within some types of alcoholism? This remains to be demonstrated by future research, but the theory of psychological types certainly would permit this suggestion.

Recovery

An unknown number of alcoholics experience a "bottom," or their loved ones or employers stage an "intervention," and rather than continue their painful journey to sure and certain death from alcohol, they begin the road to recovery (20). The most difficult facet of beginning recovery, and the objective of intervention techniques, is fostering in the alcoholic the end of denial that he has a problem. In Myers' terms:

People with a severe type deficit, especially a deficit of judgment, seem to build an immense resistance not only against making the effort but even against admitting that the effort should be made. (24:196)

Overcoming the resistance to admitting that he has a problem is the beginning of recovery. Many alcoholics in recovery have noted the different character of their lives as recognizing "the areas in our lives where we did not quite grow up" (30:3).

Whatever the background of the alcoholic, the experience of growing up can be viewed in the context of Myers' remarks on development of the youngster whose life has been filled with obstacles to good type development.

A sense of guilt or incompetence is a logical enough consequence of failure to develop. In undeveloped people who could and should have developed, the lack of development cannot be explained as due to a long-past experience that is "no fault of their own." Such people need to get the process of development running at last under its own power (24:195).

Central to development of the nascent perceptive and judgment abilities is the individual's understanding of what perception is, and what judgment is, and learning to use "perception before judgement" (24:199). People then must learn what kind of perception and judgment they favor, and provide themselves with experiences that will foster their learning these skills to attain their own type excellence (24:201). To do this, they must learn what processes are appropriate for "a given situation" and balance the less development processes as they are brought along the road to maturity and usefulness (24:201-202). Each of the processes must be developed to some extent to master the varied types of situations encountered in life: sensing for facing and gathering facts, intuiting for seeing possibilities, thinking for analyzing cause and effect, and feeling to temper one's human relations (24:205-206).

Those who recover with the help of Alcoholics Anonymous share their experiences in growing up and learning new methods of responding to the challenges life offers. They also begin to work a "design for living" that centers upon living a spiritual life void of any type of alcohol at all (3:28).

Jung himself recognized the miraculous quality of this recovery when he diagnosed Roland H.,

The doctor [Jung] said: "You have the mind of a chronic alcoholic. I have never seen one single case recover, where that state of mind existed to the extent that it does in you." Our friend felt as though the gates of hell had closed on him with a clang.

He said to the doctor, "Is there no exception?"

"Yes," replied the doctor, "there is. Exceptions to cases such as yours have been occurring since early times. Here and

there, once in a while, alcoholics have had what are called vital spiritual experiences. To me these occurrences are phenomena. They appear to be in the nature of huge emotional displacements and rearrangements. Ideas, emotions, and attitudes which were once the guiding forces of the lives of these men are suddenly cast to one side, and a completely new set of conceptions and motives begin to dominate them [emphasis added]. In fact, I have been trying to produce some such emotional rearrangements within you. With many individuals the methods which I employed are successful, but I have never been successful with an alcoholic of your description." (3:27)

What Jung was unable to accomplish for this suffering alcoholic who wanted more than anything to regain self-control in his life was accomplished for him by the intervention of a loving God (3:26-28). The man attained recovery through Alcoholics Anonymous and completed his life a man free from slavery to alcohol (3:26-28).

Summary

This chapter has presented Jung's theory of psychological types and the extension of his theory into an operational mode of determining personality by Katherine Briggs and Isabel Myers. Research applying the Myers-Briggs indicator to alcoholism has been discussed. The researcher's suggestions on how to view alcoholism in the context of psychological type theory and type development have been discussed in relation to adult children of alcoholics and the alcoholic individual. Last, a brief discussion of recovery was presented. The next chapter describes the methodology used for the study.

III. Methodology

This chapter discusses the methodology used to achieve the objectives of this study. The chapter contains a brief discussion of the research design, a description of the population surveyed, and the methods used to obtain sample data. The research objectives and the subhypotheses used to answer each research question are presented, together with the appropriate decision rules. The methods of testing the sample data, and the various data bases against which the sample data were tested, are also discussed.

Research Design

A pre-experimental design of the static-group comparison type was used for the study. A randomized design was not feasible because individuals effected by alcoholism in the Air Force and in various comparison groups are not known. Given the exploratory nature of the study, this design is deemed appropriate.

A static-group comparison was used to compare the observed differences between two groups for the purpose of establishing the effect of a condition which one group had experienced and the other had not (7:12). The condition affecting the sample population was alcoholism. The observed differences were measured in the form of the sample population's MBTI types compared to MBTI distributions of three appropriate control groups. The MBTI scores for the three comparison groups were secondary data taken from published sources. The first two

control groups were comprised of MBTI type distribution data from the general population and from an Air Force sample, both from the Center for Applications of Psychological Type (CAPT) data bases (23:240-291; 26:4-6). The third control group was comprised of psychological type distributions from Luzader's article on alcoholism (17:62). The researcher expected to demonstrate that the general population and Air Force groups were different from the sampled alcoholic group, while the two alcoholic groups were similar.

Difficulties associated with a pre-experimental design include threats to internal and external validity. Campbell and Stanley state the major threats to internal validity for this type of design are selection, mortality, and interaction of the various threat factors (7:8). Selection refers to the difference between the kinds of people which make up the comparison groups (8:53). Mortality is the effect of different individuals who leave the groups during the experiment (8:53). Interaction refers to these threats confounding themselves (8:53). Interaction of selection and condition is the major course of problems with external validity (7:8). It is caused by receiving responses only from volunteers and can limited the ability to generalize beyond the sample group (8:73).

To control for these threats, the researcher matched the demographics of the sample groups and control groups as closely as possible. Administration of the MBTI was convenient for the sample group, thus encouraging maximum participation. No attempts were made to control the internal threats of mortality or interaction between the threats.

Population

The sample population was composed of active duty Air Force personnel who were undergoing out-patient treatment (follow-on support) for alcoholism at the Social Actions facility at Wright-Patterson Air Force Base from 1 May to 1 August 1986. The total number of Air Force personnel available for this study was 64. Of those personnel, 31 individuals, approximately 48.4%, participated by completing the survey. The three largest reasons for not participating were: completion of follow-on support program (9 people, 14%), refusal (8 people, 12.5%), and discharge/separation/retirement from the Air Force (5 people, 7.8%). Of the total participants, the majority (28) were male, comprising 90.3%; the remaining three participants were female (9.7%). Additionally, 24 (77.45%) of the respondents were medically diagnosed as alcoholics, and the remaining 7 (22.55%) were classified as problem drinkers.

Survey Administration

Form G of the Myers-Briggs Type Indicator were administered to personnel attending follow-on support groups over a period of approximately six weeks. The general guidelines contained in the Manual: A Guide to the Development and Use of the Myers-Briggs Type Indicator, were followed (23:7-8). Each group was briefed on what the MBTI determines, the purpose of the research, and use of the results, before they were asked to participate as volunteers. Additionally, participants were offered print-outs of their results describing their type. Questions which they had concerning the MBTI or the study were answered by the researcher.

In order to insure volunteers' anonymity and privacy, the answer sheets were coded with control letters only. No names were used. Participants were asked to complete the demographic portion of the answer sheets, but were told that a response in the gender block was the only personal information required.

To assist the respondents in answering the MBTI questions, the researcher stressed volunteers should respond as truthfully as possible about their preferences, and not as their employer would expect them to, or as they might wish to be (23:8). Volunteers returned the survey material in an enclosed envelope to their group facilitators. The researcher picked up all returned material from the various group facilitators by July 15.

Data Collection

Two sources of data were used for this study. The first source was the participants' completed Form G answer sheets, which provided the MBTI information. The other sources were the group facilitators, who provided alcoholism classification data on the respondents. The answer sheets were optically scored on the Air Force Institute of Technology (AFIT) academic support computer. The alcoholism classification information was recorded manually. A computer program provided by the research advisor was used to check and correct the data file and to produce individual respondent data, individual summary data, and group data.

The group output data provided a listing of the sixteen types and the number of individuals in each type. Additionally, the grouped

report showed the number of individuals in each of the following categories: EI, SN, TF, and JP; and ST, SF, NF, and NT. The individual summary data provided each individual's type, gender, and continuous scores. The individual summary data were merged with the manually transcribed classification data for analysis.

Analysis Techniques

Various subprograms of the Statistical Package for the Social Sciences (SPSSx) were used to conduct the statistical analyses of this study (27; 32; 33). An alpha level of 0.05 was selected to limit the probability of a Type I error (rejecting the null hypothesis when it is true) to a maximum of 5%.

First Research Objective. To determine if the psychological types of Air Force personnel undergoing alcohol rehabilitation treatment differ from the psychological types of the population in general.

The null (H_0) and alternative (H_a) hypotheses used for this objective were as follow:

H_0 : The distribution of psychological types of Air Force personnel undergoing treatment is the same as the psychological types of the general population.

H_a : The distributions are different.

Three types of distributional comparisons were made to test the null and alternative hypotheses. The first compared the sample population's Jungian types defined in Table 1 of Chapter II to those of the general population. The second evaluated each of the dichotomies (EI, SN, TF, JP) individually between the two groups, and the last evaluated the cognitive styles (ST, SF, NF, NT) of the two groups. The

small sample size required the general comparison to be made by Jungian type without differentiation by gender or alcoholism classification. Statistical reports in the CAPT data banks and the sample of the Air Force alcohol abusers also were regrouped by Jungian types. The decision rule was that all three comparisons must show different distributions to reject the null hypothesis.

Subobjective One. The null (H_0) and alternative (H_a) hypotheses used for this statistical comparison were as follows:

H_0 : The distribution of the Jungian types of Air Force personnel undergoing treatment is the same as the distribution of Jungian types in the general population.

H_a : The distributions are different.

The comparison data used for this subobjective were taken from the CAPT data base for males for Form G (26:4). This data base was used because one could substantiate that it provided the best comparison with the sample demographic data despite its bias toward T types (23:45). No attempts were made to adjust for that bias or for the potential sample bias caused by including data from the three women. The SPSSx program NPAR CHI SQUARE was used to make the statistical comparisons.

Subobjective Two. The null (H_0) and alternate (H_a) hypotheses used for this subobjective were as follows:

H_0 : The distribution of EI, SN, TF, and JP dichotomies are the same for the sample as for the general population.

H_a : The distributions are different.

The comparison data used for this subobjective were taken from the CAPT data base for males for Form G (26:6). The Form G data were

grouped by EI, SN, TF, and JP dichotomous preferences, and the SPSSx program NPAR CHI SQUARE was used to compare the two sets of data. The decision rule was that three or more of the dichotomies must be different from those of the control group to permit rejection of the null hypothesis.

Subobjective Three. The null (H_0) and alternate (H_a) hypotheses used for this subobjective were as follows:

H_0 : The distribution of ST, SF, NF and NT (cognitive style indicators) are the same for the sample as for the general population.

H_a : The distributions are different.

The comparison data used for this subobjective were taken from the CAPT data base for males for Form G (26:6). The Form G data were grouped by ST, SF, NF and NT, and the SPSSx program NPAR CHI SQUARE was used to compare the two sets of data.

Intrasample Comparisons. Although not explicitly stated as an objective, the researcher made additional statistical tests to assess other factors which may be related to alcoholism. These were related to typology, type development and classification status of the individuals within the sample group.

By "typology" the researcher means the following comparisons: Jungian types as defined in Table 1 in Chapter II, which focus on attitude and dominant function; cognitive style (ST, SF, NF, and NT); and dominant/auxiliary functional pairs. "Type development" refers to the strength or level of preference as defined by Myers and McCaulley, of which preference scores are a measure (23:58-61). Myers found the

preference scores to be useful in determining maturity of type development (24:178-179). "Classification status" pertains to the Air Force system of classifying individuals as alcohol abusers (alcoholic) or problem drinkers, as noted in Chapter I.

Groupings for type development defined by Myers and McCaulley were used, with all preference scores of 9 or less, termed "slight," grouped together (23:58). Scores higher than 10 were classified as "moderate or greater." This regrouping was necessitated by the small sample size and allowed the researcher to focus on those with slight preferences, which was the grouping of primary interest.

The following questions were assessed:

1. Is there a relationship between Jungian type (dominant attitude and dominant function preference) and classification status as an alcohol abuser or problem drinker?
2. Is there a relationship between Jungian type and type development as indicated by the preference scores?
3. Is there a relationship between individuals' type development as indicated by preference scores and classification as an alcohol abuser or problem drinker?
4. Is there is relationship between type development as indicated by preference scores and dominant function?
5. Is there a relationship between type development as indicated by preference scores and auxiliary function?
6. Is there a relationship among type development as indicated by preference scores, dominant function, and classification as an alcohol abuser or problem drinker?

7. Is there a relationship among type development as indicated by preference scores, auxiliary function, and classification as an alcohol abuser or problem drinker?

The null (H_0) and alternate (H_a) hypotheses used in the statistical evaluation of the above questions were in the following general form:

H_0 : There is no relationship between (or among) the variables.

H_a : There is a relationship between (or among) the variables.

The SPSSx program CROSSTABS was used to assess the relationships among the variables: Jungian type, dominant function, auxiliary function, type development, and classification.

Second Research Objective. To determine if the psychological types of Air Force personnel undergoing alcohol rehabilitation treatment differ from the psychological types of civilians who have received treatment for alcoholism.

The null (H_0) and alternative (H_a) hypothesis used for this objective were as follows:

H_0 : The distribution of psychological types of Air Force personnel undergoing treatment is different from the distribution of psychological types of civilians who have received treatment for alcoholism.

H_a : The distributions are the same.

Three types of distributional comparisons were made to test the null and alternative hypothesis. The first comparison evaluated the sample populations' Jungian type distribution with those of Luzader's civilian sample. The second analysis evaluated each of the dichotomies (EI, SN, TP, JP) individually between the two groups, and the last evaluated the cognitive styles (ST, SF, NF, NT) of the two groups. The

small sample size required the general comparison to be made by Jungian type without differentiation by gender or alcoholism classification, therefore, the data from the civilian alcoholic sample also were regrouped by Jungian types.

To make the statistical comparisons the null and alternative hypotheses of the following subobjectives had to be stated in a reverse fashion. That is, the null hypotheses for the subobjective was that the distributions were the same. The alternative hypotheses became that the distributions were different. The decision rule used for the research objective, as contrasted to the subobjectives, was that the alternative hypothesis would not be accepted if any subobjective null hypothesis was rejected. In short, all three subobjectives must show the distributions are similar to reject the null hypothesis.

Subobjective One. The null (H_0) and alternative (H_a) hypotheses used for this statistical comparison were as follows:

H_a : The distribution of the Jungian types of Air Force personnel undergoing treatment is the same as the Jungian types of civilian personnel who have received treatment for alcoholism.

H_0 : The distributions are different.

The comparison data used for this subobjective were taken from Luzader's findings for males (17). That data base was used because it was the only known study to date. No attempts were made to adjust for possible bias arising by inclusion of chemically dependent individuals in addition to alcoholics. The SPSSx program NPAR CHI SQUARE was used to make the statistical comparisons.

Subobjective Two. The null (H_0) and alternate (H_a) hypotheses used for this subobjective were as follows:

H_0 : The distribution of EI, SN, TF, and JP dichotomies within the Air Force sample are the same as those found in the Luzader study.

H_a : The distributions are different.

The comparison data used for this subobjective were taken from the Luzader study. The data were grouped by EI, SN, TF and JP dichotomous preferences. The SPSSx program NPAR CHI SQUARE was used to compare each dichotomous preference individually within the two data sets. The decision rule was if any one or more of the dichotomies produced a statistically significant difference, then the subobjective null hypothesis would be rejected.

Subobjective Three. The null (H_0) and alternate (H_a) hypotheses used for this subobjective were as follows:

H_0 : The distribution of ST, SF, NF, and NT (cognitive style indicators) for the Air Force sample are the same as those in the Luzader study.

H_a : The distributions are different.

The comparison data used for this subobjective were also taken from Luzader's study. The data were grouped by ST, SF, NF and NT, and the SPSSx program NPAR CHI SQUARE was used to compare the two data sets.

Third Research Objective. To determine if psychological types of Air Force personnel undergoing alcohol rehabilitation treatment differ from the general Air Force population.

The null (H_0) and alternative (H_a) hypotheses used for this objective were as follows:

H_0 : The distribution of psychological types of Air Force personnel undergoing treatment is the same as the distribution of psychological types of the general Air Force population.

H_a : The distributions are different.

Three types of distributional comparisons were made to test the null and alternative hypotheses. The first comparison evaluated the Jungian types of the sample with those of the Air Force in general (23:244-292). The second analysis evaluated each of the dichotomies (EI, SN, TF, JP) individually between the two groups, and finally evaluated the cognitive style (ST, SF, NF, NT) of the two groups. The decision rule was that all three comparisons must show the distributions were different to reject the null hypothesis.

Subobjective One. The null (H_0) and alternative (H_a) hypotheses used for this statistical comparison were as follows:

H_0 : The distribution of the Jungian types of Air Force personnel undergoing treatment is the same as the distribution of Jungian types in the Air Force in general.

H_a : The distributions are different.

The comparison data used for this subobjective were taken from CAPT data for the Air Force population in general (23:244-292). No attempts were made to adjust for bias. The SPSSx program NPAR CHI SQUARE was used to make the statistical comparisons.

Subobjective Two. The null (H_0) and alternate (H_a) hypotheses used for this subobjective were as follows:

H_0 : The distribution of EI, SN, TF, and JP dichotomies are the same for the sample as the general Air Force population.

H_a : The distributions are different.

The comparison data used for this subobjective were taken from CAPT data for the Air Force population in general. The comparison data were grouped by EI, SN, TF and JP dichotomous preferences, and the SPSSx program NPAR CHI SQUARE was used to compare the two data sets. The decision rule was that three or more of the dichotomies must be different from those of the control group to permit rejection of the null hypothesis.

Subobjective Three. The null (H_0) and alternate (H_a) hypotheses used for this subobjective were as follows:

H_0 : The distribution of ST, SF, NF and NT (cognitive style indicators) are the same for the sample as for the general Air Force population.

H_a : The distributions are different.

The comparison data used for this subobjective were taken from CAPT data for the Air Force in general. The control data were grouped by ST, SF, NF and NT cognitive style preferences, and the SPSSx program NPAR CHI SQUARE was used to compare the two sets of data.

Summary

This chapter has presented the methodology used to achieve the objectives of this study. The chapter discussed the research design, the population surveyed, and the methods used to collect and score the data. It presented the various analyses performed to obtain answers to the research objectives and provided the decision rules for each research question. The next chapter presents the analysis of the results.

IV. Results and Analysis

This chapter presents the results of the analyses conducted on the data collected from the MBTI which was administered to the sample of Air Force alcohol abusers and problem drinkers. Descriptive and comparative data on the sample population are presented first. This is followed by descriptions of test results for comparing the sample to the general population. Results of intersample comparisons to examine type development and relationship to other variables are then presented. The last portion deals with the results of comparisons to data from Luzader's study of alcoholics (17) and a comparison to the Air Force population data in the CAPT data bank.

Sample Type Distribution Results

Description of the Sample Population. Of the 31 voluntary participants in the study, 28 (90.3%) were male and 3 (9.7%) were female. Because of the small sample size, the data for males and females were grouped together. Total sample population distribution of types is displayed in Table 3. Five types were not represented in the sample: INFJ, ISTP, ESFP, ENFP and ENTJ. The single largest type group was the INTJ, with six of the respondents and 19.4% of the total. ISTJ and ESTJ tied for the next largest proportions, with five in each group, and 16.1% of the total in each type cell. The INTJ, ISTJ and ESTJ types accounted for over half (51.6%) of the sample. Table 3 highlights the classification of the sample as related to the distinction

Table 3

Distribution of MBTI Types
(N=31)

<u>ISTJ</u>	<u>ISFJ</u>	<u>INFJ</u>	<u>INTJ</u>
N = 5 % = 16.1	N = 4 % = 29.9	N = 0 % = 0.0	N = 6 % = 19.4
<u>ISTP</u>	<u>ISFP</u>	<u>INFP</u>	<u>INTP</u>
N = 0 % = 0.0	N = 2 % = 6.5	N = 2* % = 6.5	N = 1** % = 3.2
<u>ESTP</u>	<u>ESFP</u>	<u>ENFP</u>	<u>ENTP</u>
N = 1 % = 3.2	N = 0 % = 0.0	N = 0 % = 0.0	N = 3 % = 9.7
<u>ESTJ</u>	<u>ESFJ</u>	<u>ENFJ</u>	<u>ENTJ</u>
N = 5*** % = 16.1	N = 1**** % = 3.2	N = 1 % = 3.2	N = 0 % = 0.0

NOTES: Percentages rounded to the nearest hundredth.

* Both individuals are problem drinkers, one is female.

** Individual is female.

*** Four individuals are problem drinkers.

**** Individual is a problem drinker and is female.

between medically diagnosed alcohol abusers versus problem drinkers.

Both of the INFPs were problem drinkers, and one was female. The one individual in the INTP cell was a problem drinker and female. Of the ESTJs, four (80%) were problem drinkers; only one ESTJ was diagnosed as

alcoholic. Within the ESFJ cell, the one individual was a female problem drinker.

Table 4 shows the type distribution by dichotomous and cognitive style groupings. Within the dichotomous groupings, the largest percentage of the sample populations were I's (64.52%), Ss (58.06%), Ts (67.74%), and Js (70.97%). Of the cognitive style groupings, approximately one-third of the sample population were STs and one-third were NTs. The NFs and SFs together comprise the remaining third of the sample. The proportion of problem drinkers versus alcohol abusers among the various groupings was interesting. Of the 20 I's, only two were classified as problem drinkers; the remainder (90%) were abusers. Of the 13 Ns in the sample, only 2 were problem drinkers and the remaining 85% were abusers. Of the 21 Ts, only 4 were problem drinkers; the abusers were 80% of the total Ts. This trend was apparent in the JP dichotomy as well. Within the cognitive style groupings, only the NTs contained no problem drinkers; all were diagnosed as alcohol abusers.

Jungian Type Distribution. The sample was grouped by Jungian type and the distribution is shown in Table 5. All the Jungian types were represented. The largest proportion were Jungian type IS (29.03%), which includes ISTJ and ISFJ, and the smallest proportion occurred in the IT (ISTP and INTP) and ES (ESTP and ESFP) types, each of which were 3.32% of the total sample. Table 5 segregates the problem drinkers from the alcohol abusers. Interestingly, the IS and IN types, which composed approximately 48% of the total sample, contained only alcohol

Table 4
 MBTI Type Distributions by Type Groupings
 (N=31)

Index	N=	Percentage*	Problem	Abuser
E	11	35.48	5	6
I	20	64.52	2	18
S	18	58.06	5	13
N	13	41.94	2	11
T	21	67.74	4	17
F	10	32.26	3	7
J	22	70.97	5	17
P	9	29.03	2	7
ST	11	35.48	4	7
SF	7	22.58	1	6
NF	3	9.68	2	1
NT	10	32.26	0	10

* Rounded to nearest hundreth.

abusers. Conversely, the Jungian type ET (ESTJ and ENTJ), composing 16.13% of the total, contained over half of all the problem drinkers. within the ET grouping, four of the five individuals, 80% were diagnosed as problem drinkers.

Continuous Scores. The total sample mean continuous score in the EI dimension was 107.516, with a standard deviation of 29.298. the median value was 113.00 and the mode was 83.00. Although the mode was in the E range, these measures illustrate the sample's over-all tendency toward introversion. The mean continuous score for the SN dimension was 90.355, with a standard deviation of 29.173. The median value was 91.00 and the mode was 101.00. These three measures show an

Table 5
Jungian Type Distribution of Sample
(N=31)

MBTI Type	Jungian Type	Observed	Percentage	Problem	Abuser
ISTJ ISFJ	IS	9	29.03	0	9
INFJ INTJ	IN	6	19.35	0	6
ISTP INTP	IT	1	3.23	0	1
ISFP INFP	IF	4	12.90	2	2
ESTP ESFP	ES	1	3.23	0	1
ENFP ENTP	EN	3	9.68	0	3
ESTJ ENTJ	ET	5	16.13	4	1
ESFJ ENFJ	EF	2	6.45	1	1

overall preference of the sample for sensing. On the TF dimension, the mean continuous score was 92.258, with a standard deviation of 23.858. The median was 91.00 and the mode was 57. These measures confirm the sample population's tendency toward thinking. Last, the JP dimension mean continuous score was 90.774, with a standard deviation of 26.720. The median and modal values both were 87.00. These measures illustrate the sample population's preference for judgment.

Descriptive Data Recap. Overall, the most common types were INTJ, ISTJ, and ESTJ. Descriptive analyses by dichotomous preferences portrayed a sample that prefers I, S, T and J. The cognitive style groupings were weighted toward the NT and ST functional combinations. The types with no representation were INFJ, ISTP, ESFP, ENFP, and ENTJ. Within the groupings by Jungian type, the most common were IS and IN, which includes ISTJ, ISFJ, and INTJ, which accounted for almost half of the sample population. The smallest groupings occurred in Jungian types IT and ES, which include ISTP, INTP, ESTP, and ESFP. Continuous scores reinforce the observed trend toward introversion (I), sensing (S), thinking (T), and judging (J). The total sample includes only seven problem drinkers who were predominantly ESTJ types and their distribution was noteworthy. Of the problem drinkers, 70% were E types, which opposes the group's overall trend towards I. Two of the females were problem drinkers (INFP and ESTJ) and the other was an alcohol abuser (INTP). No trends unique to the females were apparent based upon the descriptive analyses.

Sample Population Statistical Analyses

Comparison to General Population. SPSSx subprogram NPAR TESTS CHI SQUARE was used to compare the 31 sample data sets to the CAPT data base for the general population. Three comparisons were performed: the first evaluated Jungian type, the second evaluated primary dichotomies (EI, SN, TF, and JP), and the third evaluated cognitive style (ST, SF, NF, and NT).

Jungian Type Evaluation. Table 6 shows the results of the comparison of the sample population to the general population by Jungian type. The MBTI data in the CAPT data base for the general population were converted to Jungian type to permit the comparison. The Jungian types IS, IN and IF were overrepresented; all the E types and the remaining I type (IT) were underrepresented. The chi square statistic was 9.101 and the observed significance level was 0.245. Based upon the chi square test, the sample was not statistically different from the CAPT data base for the general population. Although the results were insignificant, one should realize the chi square test requires an expected value of five or greater in each cell. In this instance, six of the eight cells contained expected values of less than five, and even significant results would have to be caveated. The sample would have had to number 71 to satisfy the condition that all cells contain expected values equal to or greater than five.

Primary Dichotomies Evaluation. Results of analyses by primary dictotomies are shown in Table 7. As can be seen in the table, the I's were overrepresented at the expense of the Es, with a chi square statistic of 2.367 with an observed significance level of 0.124. Because the observed significance level was greater than the predetermined alpha level of .05, the overrepresentation of the I's was not significant. The SN and TF dimensions showed a very slight overrepresentation of the Ss and Ts, however, the observed significance levels were 0.852 and 0.822, respectively, which indicated the differences were quite insignificant. The Js were overrepresented at the expense of the

Table 6
 Sample to General Population by Jungian Type
 (7 d.f.)

Jungian Type	Observed	Expected	Residual
IS	9	6.14	2.86
IN	6	3.07	2.93
IT	1	4.06	-3.06
IF	4	2.45	1.55
ES	1	2.79	-1.79
EN	3	3.81	-0.81
ET	5	6.48	-1.48
EF	2	2.20	-0.20

Chi Square Statistic 9.101; Significance Level: 0.245

Ps, with a chi square statistic of 2.172 with an observed significance level of 0.141. Once again, the observed significance level was such that the difference was not statistically significant.

Cognitive Style Evaluation. Results of the comparison of the sample population by cognitive style groupings are shown in Table 8. SF and NT cognitive styles were overrepresented and the NF and ST groupings were underrepresented. The overall chi square statistic of 2.377 with an observed significance level of 0.498, indicated an even probability of this distribution occurring, hence the result was statistically insignificant.

Recap of Comparison to General Population. All three comparisons showed that the differences between the sample population and the CAPT

Table 7

Sample to General Population by Primary Dichotomies
(1 d.f.)

Dichotomy	Observed	Expected	Residual
E	11	15.28	-4.28
I	20	15.72	4.28
Chi Square Statistic: 2.367; Significance Level: 0.124			
S	18	17.48	0.52
N	13	13.52	-0.52
Chi Square Statistic: 0.035; Significance Level: 0.852			
T	21	21.58	0.58
F	10	9.42	-0.58
Chi Square Statistic: 0.051; Significance Level: 0.822			
J	22	17.95	4.05
P	9	13.05	-4.05
Chi Square Statistic: 2.172; Significance Level: 0.141			

Table 8

Sample to General Population by Cognitive Style
(3 d.f.)

Type Pair	Observed	Expected	Residual
ST	11	12.83	-1.83
SF	7	4.62	2.38
NF	3	4.84	-1.84
NT	10	8.71	1.29
Chi Square Statistic: 2.377; Significance Level: 0.498			

data base for the general population were statistically insignificant. Additionally, one should note that the chi square statistic for the Jungian type comparison and cognitive style comparison were questionable due to the small sample size, because the expected values in many of the cells were less than five (31:46).

Results of Intrasample Comparison. Additional statistical tests were accomplished to assess other factors which may be related to alcoholism within the sample. The factors explored were typology, type development, and classification, as defined in Chapter III. Seven tests were conducted to isolate factors that may be indicators of alcoholic tendencies. These are discussed individually.

Relationship between Jungian Type and Classification Status. Table 9 shows the relationship between the eight Jungian types and classification as either a problem drinker or an alcohol abuser. The results of SPSSx CROSSTABS evaluation showed a significant relationship between the Jungian types and classification as evidenced by the observed significance level of 0.0127. However, it must be noted that 15 of the 16 cells in the contingency table contained expected values of less than 5, and the minimum expected value was 0.226. Of note were both Jungian types IS (introverted sensing) and IN (introverted intuiting), which were comprised only of individuals classified as alcohol abusers. Additionally, the majority of the problem drinkers were in the Jungian type ET (extraverted thinking).

Relationship between Jungian Type and Type Development. Table 10 depicts the relationship between the eight Jungian types and

Table 9
Jungian Type and Classification Status
(7 d.f.)

Jungian Type	Problem Drinker	Alcohol Abuser
IS	0	9
IN	0	6
IT	0	1
IF	2	2
ET	4	1
EF	1	2
ES	0	1
EN	0	3

Chi Square Statistic: 17.843; Significance: 0.0127

Table 10
Jungian Type and Type Development
(7 d.f.)

Jungian Type	Slight Development	Moderate or Better Development
IS	7	2
IN	6	0
IT	0	1
IF	2	2
ET	2	3
EF	0	2
ES	1	0
EN	1	2

Chi Square Statistic: 12.351; Significance: 0.0893

type development as distinguished by preference scores. The preference scores were coded as "slight" (1 through 9) or "moderate or greater" (10 and above). If any one MBTI dimension had a preference score of 9 or less, the individual was placed in the slight preference grouping. The SPSSx subprogram CROSSTABS indicated a relationship between the two variables (Jungian type and type development). However, the observed significance level of 0.0893 did not meet the pre-established criterion of an alpha level of 0.05. Additionally, 15 of the 16 cells contained expected values of less than five. Interestingly, the Jungian types IS and IN, which were totally composed of alcohol abusers, contained 13 of the 19 individuals who had scores indicating slight type development. The ET group, which contained the majority of the problem drinkers, had three individuals with moderate or better type development and only two individuals with slight type development.

Relationship between Type Development and Classification.

Table 11 shows the relationship between individuals' type development and their classification as an alcohol abuser or a problem drinker. The results of the SPSSx CROSSTABS evaluation showed a significant relationship existed between type development and classification in the sample population after Yates' correction for continuity was applied. This adjustment improves the approximation in the case of a 2x2 table with small expected values in the cells (27:53). Prior to application of the Yates correction the observed significance level was 0.1144; after the correction it was 0.0434. Of interest was that 17 of the 19 individuals medically classified as alcohol abusers had slight type development.

Table 11
Type Development and Classification Status
(1 d.f.)

	Alcohol Abuser	Problem Drinker
Moderate or Better Type Development	7	5
Slight Type Development	17	2
Chi Square Statistic: 2.49289*; Significance: 0.1144*		
Chi Square Statistic: 4.07976**; Significance: 0.0434**		

* Before Yates' correction.

** After Yates' correction.

Relationship between Type Development and Dominant Function.

Table 12 shows results of SPSSx CROSSTABS evaluation of type development and dominant function. Although six of the eight cells had expected values of less than five, the results of this evaluation indicated a relationship between these two factor in the sample population. However, the observed significance level of 0.0913 was greater than the criterion alpha level of 0.05. Despite the limitations due to the observed significance level, it was noteworthy that the majority of individuals with slight type development preferred sensing or intuiting (irrational or perceiving functions) as their dominant function. Conversely, the majority of the individuals with moderate or better type development preferred thinking or feeling (rational or judging functions) as their dominant function.

Table 12
 Type Development and Dominant Function
 (3 d.f.)

Dominant Function	Slight Type Development	Moderate of Better Type Development
Sensing	8	2
Intuiting	7	2
Thinking	2	4
Feeling	2	4

Chi Square Statistic: 6.45984; Significance: 0.0913

Relationship between Type Development and Auxiliary Function.

Table 13 displays results of SPSSx CROSSTABS test for the relationship between type development and auxiliary function. Although six of the eight cells had expected values of less than five, the results indicated a significant relationship (observed significance level of 0.0382) between the variables in the sample population. The significant finding was that 13 of the 15 individuals who preferred thinking as their auxiliary function also had slight type development.

Relationship among Type Development, Dominant Function, and Classification. Results of SPSSx CROSSTABS for relationship between type development and dominant function, controlling for classification status, are displayed in Table 14. The Fisher's Exact test for the problem drinker yielded an observed significance level of 0.71429. For the alcohol abuser group, the observed significance level was 0.3796. The observed significance levels were the result of the small

Table 13
Type Development and Auxiliary Function
(3 d.f.)

Dominant Function	Slight Type Development	Moderate of Better Type Development
Sensing	3	5
Intuiting	1	3
Thinking	13	2
Feeling	2	2

Chi Square Statistic: 8.41510; Significance: 0.0382

Table 14
Type Development, Dominant Function, and Classification
(3 d.f.)

Dominant Function	Problem Drinkers*		Alcohol Abusers**	
	Slight	Moderate+	Slight	Moderate+
Sensing	0	0	8	2
Intuiting	0	0	7	2
Thinking	1	3	1	1
Feeling	1	2	1	2

* Fisher's Exact Test Significance: 0.71429
 ** Chi Square Statistic: 3.07899; Significance: 0.3796

sample size and attempting to compare across three variables. Hence, the comparisons were of little value.

Relationship among Type Development, Auxiliary Function, and Classification. Results of SPSSx CROSSTABS for the relationship between type development and auxiliary function, controlling for classification status, are displayed in Table 15. The Fisher's Exact test for the problem drinker group yielded an observed significance level of 0.52381. For the alcohol abuser group, the observed significance level was 0.0565. The high value of the observed significance level for the problem drinker group was probably the result of the small sample size and comparing across three variables. For the alcohol abuser group, seven of the eight expected values were less than five and the observed significance level slightly exceeded the criterion alpha level. Although the alpha level was exceeded, there was a noticeable overrepresentation of individuals whose auxiliary function was thinking and whose type development was slight.

Recap of Intrasample Relationships. Three of the seven intrasample relationships produced statistically significant results; that is, the observed significance levels were numerically less than the preselected alpha level of 0.05. These were for the variable pairs, Jungian type and classification, type development and classification, and type development and auxiliary function. Two of the relationships, Jungian type with type development and type development with dominant function, yielded chi square statistics within the observed significance range of 0.05 to 0.10. The other two relational groupings for the three

Table 15

Type Development, Auxiliary Function, and Classification
(3 d.f.)

Dominant Function	Problem Drinkers*		Alcohol Abusers**	
	Slight	Moderate+	Slight	Moderate+
Sensing	1	4	2	1
Intuiting	1	1	0	2
Thinking	0	0	13	2
Feeling	0	0	2	2

* Fisher's Exact Test: Significance: 0.52381

** Chi Square Statistic: 7.54286; Significance: 0.0565

variable sets produced generally insignificant results, although the crosstabulation by type development, auxiliary function, and the "abuser" classification had a chi square statistic which had an observed significance level of 0.0565. The problem of small sample size was apparent throughout all the statistical comparisons.

Comparison to Sample of Civilian Alcoholics. As part of this research, an effort was made to determine whether the sample of Air Force alcoholics and problem drinkers resembled the similar application of the MBTI to civilian alcoholics and drug abusers reported by researcher Marthanne Luzader (17). The research objective was to show that there was no significant difference between the two populations. Three comparisons were performed: the first evaluated Jungian type; the second evaluated primary dichotomies (EI, SN, TF, and JP); and the third evaluated cognitive style (ST, SF, NF, and NT).

Jungian Type Evaluation. Table 16 portrays the results of the distributional comparison between the sample and Luzader's data by Jungian type. The Luzader data and the research sample were converted to Jungian type to permit the comparison. The Jungian types ET (ESTJ and ENTJ) and IN (INFJ and INTJ) were overrepresented due to the sample's high number of ESTJs and INTJs. Jungian type IT (ISTP and INTP) was greatly underrepresented due to the sample containing only one INTP and no ISTPs. The chi square statistic was 11.314 and the observed significance level was 0.125. Based upon the chi square test, the sample was not significantly different from Luzader's data. Note that six of the eight cells unavoidably had expected values of less than five. For all the cells to have had expected values greater than or equal to five the sample size would have had to be 172.

Table 16
 Distributional Comparison to Luzader's Data by Jungian Type
 (7 d.f.)

Jungian Type	Observed	Expected	Residual
IS	9	8.65	0.35
IN	6	3.56	2.44
IT	1	5.70	-4.70
IF	4	4.87	-0.87
ES	1	1.86	-0.86
EN	3	3.32	-0.32
ET	5	2.14	2.86
EF	2	.90	1.10

Chi Square Statistic 11.314; Significance Level: 0.125

Primary Dichotomies Evaluation. Results of analyses by primary dichotomies are shown in Table 17. As can be seen in the table, the Es were overrepresented in the sample at the expense of the I's, with a chi square statistic of 1.132 and an observed significance level of 0.287. Because the observed significance level was greater than the predetermined alpha level of .05, the overrepresentation of the Es was not significant. The SN and TF dimensions showed a very slight overrepresentation of the Ss and Ts, however, the observed significance levels of 0.817 and 0.442, respectively, indicated the differences were

Table 17
 Distributional Comparison to Luzader's Data by Primary Dichotomies
 (1 d.f.)

Dichotomy	Observed	Expected	Residual
E	11	8.37	2.63
I	20	22.63	-2.63
Chi Square Statistic: 1.132; Significance Level: 0.287			
S	18	17.36	0.64
N	13	13.64	-0.64
Chi Square Statistic: 0.054; Significance Level: 0.817			
T	21	18.91	2.09
F	10	12.09	-2.09
Chi Square Statistic: 0.592; Significance Level: 0.442			
J	22	15.50	6.50
P	9	15.50	-6.50
Chi Square Statistic: 5.452; Significance Level: 0.020			

insignificant. The Js were significantly overrepresented at the expense of the Ps, with a chi square statistic of 5.452 with an observed significance level of 0.020.

Cognitive Style Evaluation. Results of the comparison of the sample population of cognitive style groupings are shown in Table 18. NT and SF cognitive styles were overrepresented in the sample and the NF and ST groupings were underrepresented. Although the sample was different from Luzader's data, the overall chi square statistic of 6.063 with an observed significance level of 0.109 indicated the difference was not statistically significant.

Table 18

Distributional Comparison to Luzader's Data by Cognitive Style
(3 d.f.)

Type Pair	Observed	Expected	Residual
ST	11	12.63	-1.63
SF	7	4.57	2.43
NF	3	7.36	-4.36
NT	10	6.43	3.57

Chi square statistic: 6.063; Significance Level: 0.109

Recap of Comparison to Sample of Civilian Alcoholics. In general, all comparisons showed the differences between the sample population and Luzader's data base were not statistically significant. However, a significant difference was noted in the sample's large overrepresentation of J types when compared to Luzader's data. This was the only

statistically significant finding. One should interpret the chi square statistics for the Jungian type comparison and cognitive style comparison with caution due to the small sample size (31:46).

Comparison to Air Force Population. As a part of this research, an effort was made to determine whether the sample of Air Force alcoholics and problem drinkers resembled the Air Force population in general as maintained in the CAPT data bank (25:244-292). SPSSx subprogram NPAR TESTS CHI SQUARE was used to compare the 31 sample data sets. The research objective was to show that there is a significant difference between the sample and the Air Force population. Three comparisons were performed: the first evaluated Jungian type, the second evaluated primary dichotomies (EI, SN, TF, and JP), and the third evaluated cognitive style (ST, SF, NF, and NT).

Jungian Type Evaluation. Table 19 portrays the results of the comparison of the sample population to the Air Force population in the CAPT data bank by Jungian type. The CAPT data and the research sample were converted to Jungian type to permit the comparison. The Jungian type IN (INFJ and INTJ) was overrepresented due to the sample's high number INTJs. Jungian types ES (ESTJ and ESFJ), EN (ENFP and ENTP), and IT (ISTP and INTP) were underrepresented when compared with the CAPT data on the Air Force in general. The chi square statistic was 6.925 with an observed significance level of 0.437. Based upon the chi square test, the sample was not significantly different from the CAPT data for the Air Force. Note that six of the eight cells unavoidably had expected values of less than five. A sample of 74 would have been

Table 19

Comparison of Sample to Air Force Population by Jungian Type
(7 d.f.)

Jungian Type	Observed	Expected	Residual
IS	9	8.07	0.93
IN	6	2.97	3.03
IT	1	2.97	-1.97
IF	4	2.55	1.45
ES	1	2.12	-1.12
EN	3	5.10	-2.10
ET	5	4.67	0.33
EF	2	2.55	-0.55

Chi Square Statistic 6.925; Significance Level: 0.437

required for all the cells to have had expected values greater than or equal to five.

Primary Dichotomies Evaluation. Results of analyses by primary dichotomies are shown in Table 20. As can be seen in the table, the I's were overrepresented in the sample at the expense of the Es, with a chi square statistic of 1.534 with an observed significance level of 0.216. Because the observed significance level was greater than the predetermined alpha level of .05, the overrepresentation of the I's was not significant. The SN dimension showed a very slight overrepresentation of the Ss and a corresponding underrepresentation of the Ns, however, the chi square statistic of 0.325 with its observed significance level of 0.567 indicated the difference was not significant. Ts

Table 20

Comparison of Sample to Air Force Population by Primary Dichotomies
(1 d.f.)

Dichotomy	Observed	Expected	Residual
E	11	14.44	-3.44
I	20	16.46	3.44
Chi Square Statistic: 1.534; Significance Level: 0.216			
S	18	19.53	-1.53
N	13	11.47	1.53
Chi Square Statistic: 0.325; Significance Level: 0.568			
T	21	17.83	3.17
F	10	13.17	-3.17
Chi Square Statistic: 1.323; Significance Level: 0.250			
J	22	18.26	3.74
P	9	12.74	-3.74
Chi Square Statistic: 1.865; Significance Level: 0.172			

were overrepresented and Fs were underrepresented. Again, the chi square statistic (1.323) with the observed significance level (0.250) indicated the difference was not significant. The Js were overrepresented at the expense of the Ps, with a chi square statistic of 1.865 with an observed significance level of 0.172 which was not significant.

Cognitive Style Evaluation. Results of the comparison of the sample population to the CAPT data on the Air Force by cognitive style groupings are shown in Table 21. The cognitive style NT was greatly overrepresented in the sample and the NF and ST groupings were underrepresented. The chi square statistic was 8.614 with an observed

Table 21

Comparison of Sample to Air Force Population by Cognitive Style
(3 d.f.)

Type Pair	Observed	Expected	Residual
ST	11	13.16	-2.16
SF	7	6.37	0.63
NF	3	6.80	-3.80
NT	10	4.67	5.33

Chi square statistic: 8.614; Significance Level: 0.035

significance level of 0.035. However, one should bear in mind the strength of preferences in considering this finding significant. The overrepresentation of NTs reflects the sample's high number of INTJs. Of the six total INJTs in the sample, four had preference scores of only one in the SN dimension indicating the preference for intuition was extremely weak. Of the four with a weak preference for intuition, two also expressed slight preferences on the TF scale for thinking as well. Therefore, any difference was questionable.

Recap of Comparison to Air Force Population. In general, all comparisons showed no significant differences between the sample and the CAPT data on the Air Force, with the exception of the NT overrepresentation in the test for cognitive style. However, one should keep in mind that the statistically significant difference in cognitive style was questionable due to the slight preferences of the INTJs. One should interpret the chi square statistic for the Jungian type comparison with caution due to the small sample size (31:46).

Summary

This chapter presented the results of the analyses conducted on the data collected from the MBTI for the sample. The sample was compared to CAPT data for the population in general, the Luzader data on alcoholics, and CAPT data for the Air Force population. Intersample comparisons based upon strength of type preference expressed in the preference scores were also related to Jungian type, dominant/auxiliary functions, and classification. Those assessments showed statistically significant relationships between some of the variables. The next chapter will discuss conclusions and recommendations for further research.

V. Conclusions and Recommendations

This chapter presents conclusions based upon the results and analysis of data generated in this research. Conclusions relating to the problem statement are presented first. Next, conclusions from each element of the research questions are discussed in the sequence of the research objectives and hypotheses stated in Chapter III. Last, recommendations for future research are noted.

The Problem Statement

This research sought to determine whether it is possible to identify personality types of Air Force members who have a predisposition to develop alcoholism.

Conclusions Related to Problem Statement

The researcher concluded the study demonstrated a possible method of identifying personality types of individuals who have a predisposition to develop alcohol dependency. The method would be to identify individuals whose MBTI preference scores indicate slight type differentiation in any of the primary dichotomies. The method would also focus attention upon individuals whose MBTI profiles mirror the predominant characteristics of the sampled alcohol abusers. That is, individuals whose attitudes are introversion combined with judging, whose dominant function is sensing or intuiting, and whose auxiliary function is thinking. Any one or more of these dimensions, when only slightly differentiated,

indicates an individual whose natural type development may have been inhibited. It does not follow that an individual with these undifferentiated type characteristics is necessarily alcoholic or would necessarily become alcoholic. What it means is that the individual may have been prevented from attaining good type development, for whatever reason, and these types were overrepresented in the sample.

The alcohol abusers in this sample were characterized by introversion combined with judging, either sensing or intuiting as their dominant function, and thinking as their auxiliary function. These same preferences were generally found to characterize alcohol abusers in the Luzader study. The profile of an alcohol abuser that emerged from this study was an INTJ or ISTJ who displayed slight type development, thus the weaknesses of the types rather than the strengths, could become more pronounced in these individuals (24:181).

Ordinarily, the I-TJ individual exhibits depth of concentration and deals with the exterior world with logical precision supplied by his auxiliary function of thinking. If the auxiliary is adequately developed, it provides "needed criticism" of the introvert's ideas and perceptions (23:29). However, if thinking is not well developed, the individual has no natural restraints applied to his thought processes. Because the introvert relates to the exterior objective world through his auxiliary function, the introvert's characteristic difficulty with communicating could be aggravated and the individual could become isolated in his own mind.

If the judging function, too, is poorly developed, or it receives inputs which are faulty, such individuals could not "criticize their

own inner vision," and they would be impervious to inputs from outside themselves (23:29). The sensing types would retreat into "silent pre-occupation with inner reactions to sense-impressions" with little of value resulting (13:257; 23:27). Intuitive types would show an inability to "shape their inspirations into effective action" and they would become extremely eccentric (23:29). According to Jung, the introverted intuitive type might even display "little consciousness of his own bodily existence or of its effect on others (13:260). The introvert's minority status in society, compounded by his isolation, could yield an individual who has little emotional satisfaction or stability (24:189). It seems reasonable to believe the recovery process for the alcohol abuser would entail maturing within his/her type after the person is weaned from alcohol. Effectively, the individual needs to mature within his type and experience the pain of growth without the anesthesia of alcohol.

First Research Objective Conclusions

First Research Objective: To determine if the psychological types of Air Force personnel undergoing rehabilitation for alcoholism differ from the psychological types of the population in general.

Descriptive Analysis Discussion. Descriptive data showed a sample that differed slightly from the general population. In the sample, the three largest type groups were INTJ, with 19.4% of the sample, and ISTJ and ESTJ, each with 16.1% of the sample. The general population as described in the CAPT data base (for males) is composed predominantly of ISTJ types (15.45%), followed by ESTJs (14.01%) and INTJs (7.28%)

(23:50). One can see there were more INTJs and ISTJs in the sample than in the general population. The five types not represented in the sample, INFJ, ISTP, ESFP, ENFP and ENTJ, included three types that were also relatively rare in the general population.

The sample contained roughly two-thirds I's and one-third Es, compared with Myers' estimates of three-fourths Es and one-fourth I's in the general population (23:45). The proportion of Ss was only slightly more than half, whereas Myers' estimated Ss to be three-fourths of the general population (23:45). Ts were about two-thirds of the sample, which is relatively close to Myers' estimated three-fifths of the general population (23:45). Sample Js were 70% of the total, whereas Myers estimated Js were 55-60% of the general population.

As a whole, the alcohol abusers were predominantly INTJs or ISTJs, and the problem drinkers were predominantly ESTJs. The overall comparison of the Jungian types of the sample population showed the Jungian types IN (INFJ and INTJ) and IS (ISTJ and ISFJ) contained only alcohol abusers, whereas the Jungian type ET (ESTJ and ENTJ) contained 80% of the problem drinkers.

Statistical Analyses Discussion. Three levels of statistical analysis were used to evaluate the differences noted. The first level was a comparison by Jungian type, which demonstrated that this facet was not significantly different. The second level compared the primary dichotomies of the sample to those of the general population. Likewise, it did not substantiate a statistically significant difference between the sample and the general population. The final level investigated

the distribution of cognitive styles in the sample and found no significant differences from the general population. From the statistical analyses, the evidence did not support rejection of the hypothesis that the sample was the same as the general population.

In evaluating this conclusion, one should keep in mind the unavoidable limitation of the small sample size. Whether the alcohol abuser and problem drinker are similar to or different from the general population cannot be determined from this limited sample. To evaluate the impact of the small sample size, the researcher proportionately scaled down Luzader's data, which had been concluded to be different from the general population, to the same sample size of 31. When the same three levels of testing were conducted, no statistically significant differences were found. This led the researcher to believe the small sample size masked any similarity to or difference from the control group.

Intrasample Analysis Conclusions. Seven relationships were evaluated and each is discussed individually below. All the relational comparisons were influenced by the small sample size.

Jungian Type and Classification Status. The first comparison was between Jungian type and classification status as an alcohol abuser or problem drinker. The statistical analysis showed sufficient evidence to accept the alternative hypothesis that there was a relationship between Jungian type and classification status in the sample. Jungian types IS and IN were overrepresented within the alcohol abuser classification. These two Jungian types, when translated to MBTI

types, are I—Js. Jungian type ET was overrepresented within the problem drinker classification. This type translates to MBTI types E-TJ. Within the sample, the alcohol abusers were most likely Jungian types IS and IN and problem drinkers were most likely Jungian type ET.

Jungian Type and Type Development. The second comparison assessed the relationship between Jungian type and type development as measured by the magnitude of preference scores. Statistical analysis showed that a relationship probably existed between these two variables. However, the relationship was not sufficient to accept the alternative hypothesis at the criterion alpha level of .05. The small sample size may have masked the significance of the relationship between slight type development in Jungian types IS and IN. The most likely conclusion is the small size prohibited finding the relationship which existed between the variables.

Type Development and Classification. The third comparison was between type development and classification status. Statistical analysis showed that a significant relationship existed between the variables. Problem drinkers were more likely to have moderate or better type development than were alcohol abusers. The latter were largely concentrated in the slight type development category. In comparing the abusers and the problem drinkers, the abusers consistently showed less type differentiation in one or more of the MBTI dimensions. The significance of this finding is that preference scores may be useful as an advance indicator of individuals who might develop a dependence on alcohol. One may conclude that type development

measured by magnitude of preference scores can be used to differentiate between alcohol abusers and problem drinkers.

Type Development and Dominant Function. The fourth comparison was between type development and dominant function. Although the alternative hypothesis could not be accepted, there appeared to be a relationship between these two variables. The dominant sensors and dominant intuitors within the sample were overrepresented in the slight type development category. The significance of this finding was that it provided added weight to the previous findings, as well as identified a poorly developed, dominant irrational perceptive function as a possible indicator of alcohol dependency. However, the most reasonable conclusion was that the small sample size masked the statistical significance of these two variables.

Type Development and Auxiliary Function. The fifth comparison was between type development and auxiliary function. Analysis indicated that a statistically significant relationship existed between the variables. The key factor in this comparison was the overrepresentation of thinkers with slight type development. As a corollary to the previous two findings, the third factor in the dependency equation could be a poorly developed auxiliary function of thinking. One could conclude that the characteristic of slight development and thinking as the auxiliary function was a common characteristic of the sample.

Three Variable Relationships. the sixth and seventh comparisons attempted to find statistically significant relationships

among three variables, type development, dominant/auxiliary function, and classification status. Blocking the 31-member sample set by three variables proved fruitless. No findings were possible, hence no conclusions were possible.

Intrasample Analyses Recap. The intrasample comparison provided possible clues to the early identification of the potential alcohol-dependent personality. Results of seven different comparisons pointed to significant relationships between attitude and classification status, slight type differentiation and classification status, and slight type differentiation and dominant/auxiliary functions. The findings characterized the alcohol abuser as preferring an introverted attitude combined with judging, a Myers-Briggs type denoted by I--J. The core discriminators which described this individual were a dominant perceptive function and thinking as an auxiliary function. Last, one or more of the attitudes or functions would likely indicate slight differentiation.

Interestingly, Jung recommended the auxiliary be used as the avenue of treatment for individuals who fit this characteristic (13:268-269). This is consistent with the Myers-Briggs extension of Jung's theory, since the auxiliary function is the I type's extraverted bridge to the outer world.

First Research Objective Recap. One can reasonably conclude that the small sample size prevented a finding that the sample was statistically different from the general population. Within the intrasample comparisons the researcher concluded that alcohol abusers were

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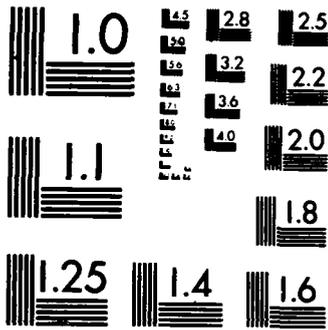
PSYCHOLOGICAL TYPE ANALYSIS USING MYERS-BRIGGS TYPE
INDICATOR OF AIR FORC (U) AIR FORCE INST OF TECH
WRIGHT-PATTERSON AFB OH SCHOOL OF SYST M R MARQUART
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

most likely to be Jungian types IS and IN, have slight type development on at least one of the MBTI dicotomous indices, and preferred thinking as their auxiliary function.

Second Research Objective Conclusions

Second Research Objective: To determine if the psychological types of Air Force personnel undergoing rehabilitation for alcoholism differ from the psychological types of civilians who have received treatment for alcoholism.

Statistical Analyses Discussion. Three levels of statistical analyses were used to evaluate whether the sample was similar to Luzader's data. The first level was a comparison by Jungian type, which demonstrated that there was not a significant difference between Luzader's data and the sample. The observed significance level of .125 may have been less than the criterion alpha of .05 if the sample had been larger. Luzader's data had a large representation of Jungian type IT at the expense of types IN and ET. The second level compared the primary dichotomies of the sample to Luzader's data. Likewise, it did not substantiate a statistically significant difference between the two groups across the four factors. The only factor which was statistically significant was the overrepresentation of judging types in the sample. The final level investigated the relationships of cognitive styles in the sample and found no statistically significant difference from Luzader's data. However, it appeared that a statistically significant difference would have resulted in the sample size

had been larger and the trend towards a relative overrepresentation of NT and SF cognitive styles had continued.

From the statistical analyses, the evidence does not support rejection of the hypothesis that the sample's type distribution was the same as the type distribution in Luzader's data. Recall if any subobjective distributional comparison showed a statistically significant difference, the decisions rule from Chapter III called for rejection of the subobjective null hypothesis, which in turn mandated rejection of the alternate hypothesis of the research objective. In evaluating the conclusion to reject the research objective's alternative hypothesis, one must keep in mind the unavoidable limitation of the small sample size and the necessity of reversing the hypotheses of the subobjectives to facilitate the statistical tests. Additionally, the null hypothesis was not accepted because the probability of committing a type II error was not known. Therefore, whether the alcohol abusers' and problem drinkers' types were the same as the types in Luzader's sample population cannot be determined from this sample.

Second Research Objective Recap. The data substantiates the conclusion that the overall differences between the sample and Luzader's data were significant. The sample of Air Force subjects was similar to, but not the same as, Luzader's sample. Due to the small sample size and the suspected large probability of committing a type II error, one should not conclude that the sample is either different from or the same as Luzader's comparison data.

Third Research Objective Conclusions

Third Research Objective: To determine if the psychological types of Air Force personnel undergoing rehabilitation for alcoholism are different from the general Air Force population.

Statistical Analyses Discussion. Three levels of statistical analyses were used to evaluate the differences noted. The first level was a comparison by Jungian type, which failed to demonstrate the significant difference the research expected. The second level compared the primary dichotomies of the sample to the general population. Likewise, it did not substantiate a statistically significant difference between the sample and the comparison general Air Force population. The third level was a comparison by cognitive style. Although a significant statistical difference was found between the cognitive styles, the difference must be questioned because of the small sample size. Additionally, if even a few of the NTs with slight type preferences had answered one question differently, the results would have removed the statistical significance.

From the statistical analysis, the overall evidence does not support rejection of the hypothesis that the sample was the same as the Air Force population in general. Whether the alcohol abuser and problem drinker are similar to or different from the general population cannot be determined from this sample.

Third Research Objective Recap. One subobjective test appeared to substantiate a statistically significant difference. However, the pre-established decision rule required all three subobjectives to

find statistically significant differences before the research objective null hypothesis could be rejected. Thus, the research objective null hypothesis was not rejected. The overall differences between the sample and the comparison data from the sample of Air Force subjects were not statistically significant. Once again, the small sample size may have influenced the results.

Summary of Conclusions

One may conclude that the study as prosecuted did not support the propositions that the sample of alcoholics was different from either the general population or the Air Force population in general. Additionally, the study failed to show the expected similarity to a previous, large-scale effort which typed civilian individuals who had been undergoing treatment for alcoholism. It is reasonable to believe the expected differences and similarities were masked by the limited size of the sample.

In spite of the small population size, three statistically significant relationships were discovered within the sample. Alcohol abusers preferred the introverted and judging attitudes and either sensing or intuiting as their dominant function. Thinking was the predominant auxiliary function among alcohol abusers. Last, one or more of the dichotomous preferences of the alcohol abusers showed slight differentiation. Psychological type theory asserts that an individual's type preferences are innate but may be modified in the child by parental and social influences. If these influences adversely effect the individual they may produce neurotic behavior in later life (12:106; 13:181).

The consequence could be the development of alcohol dependency in some psychological types. When these three factors are presented in an individual, they could serve as indicators that the individual is susceptible to alcohol abuse.

Recommendations

The researcher strongly urges that the connection between slight type differentiation and alcoholism be validated in other research. Additionally, the researcher believes that more studies need to be accomplished to characterize the common dimensions associated with alcoholism as measured by the MBTI. Since an individual's type is innate and type development can be measured as early as the seventh grade (24:178-179), type theory may offer unique diagnostic power for those dedicated to managing the many manifestations of alcoholism.

As a practical matter, this research should be duplicated within the Air Force to establish beyond a doubt the distinguishing psychological type characteristics of individuals affected by alcoholism. To avoid statistical ambiguities resulting from small sample size, a sample of at least 100 alcohol abusers and 100 problem drinkers, and an equivalent number of nonalcoholics, should be studied. The sample should be differentiated by gender as well as classification status.

The magnitude of the problem of alcoholism in our society demands at least this effort be made because the condition effects not only the alcoholic but also those around them at work and at home.

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This study applied the Myers-Briggs Type Indicator (MBTI) to 31 volunteer active duty Air Force members who had been medically diagnosed as alcohol abusers or problem drinkers. The MBTI is an operationalization of psychologist Carl G. Jung's theory of psychological types. The purpose was to determine whether it is possible to identify personality types of individuals with a predisposition to develop alcoholism. Participants were enrolled in out-patient treatment for alcoholism at the Social Actions facility at Wright-Patterson AFB from 1 May to 1 August 86. The sample was found to differ slightly from the general population because introverted, thinking and judging dimensions were overrepresented, but the differences were not statistically significant. Comparisons of sample data to MBTI data from a major study of civilian alcoholics likewise showed no statistically significant similarity of difference. The sample data also showed no statistically significant difference from the Air Force population in general. However, intrasample comparisons of alcohol abusers' and problem drinkers' MBTI preference scores showed a statistically significant frequency of slight type differentiation in one or more of the dichotomous scales within the sample alcoholics. Based upon these findings, alcohol abusers appeared to be characterized as preferring introverted and judging attitudes, and thinking as their auxiliary function. The study concluded that the MBTI could provide a possible method of identifying personality types of individuals who have a predisposition to develop alcohol dependency. The method would be the identification of individuals whose MBTI preference scores indicate slight type differentiation in any of the primary dichotomies, particularly individuals whose attitude preferences are introversion combined with judging and whose auxiliary function is thinking.

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