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BONNIE J. FONS

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By

Bonnie J. Fons

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ABSTRACT

THE MILLON ADOLESCENT PERSONALITY INVENTORY AS A TREATMENT OUTCOME MEASURE FOR ADOLESCENT PSYCHIATRIC INPATIENTS

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A static-group comparison study was conducted, in which 30 consecutively admitted adolescent psychiatric inpatients were compared to two groups of 30 high school students on the basis of their scores on the Millon Adolescent Personality Inventory (MAPI). The comparison groups were selected on the basis of their MAPI pretest scores, one group having scored in an abnormal range and one group having scored in a normal range. Hypotheses were advanced based on a theoretical integration of Millon's (1969, 1981) theory of personality, theory and research regarding adolescent psychopathology, and recent research results employing the adult version of Millon's personality measurement device, the Millon Clinical Multiaxial Inventory, as well as current research involving the MAPI.

Hypotheses regarding a comparison of test-retest stability between groups as well as between personality and expressed concern scales; differences between the first and second testing for each group; and between-group differences on MAPI Scales 2 and 8 (Inhibited and Sensitive) were tested. As predicted, the personality

scales of the MAPI demonstrated, in general, a greater degree of stability than the expressed concern scales, with the highest degree of reliability occurring in the abnormal untreated group.

It was hypothesized and supported that Scales 2 and 8 (Inhibited and Sensitive) would decrease with treatment; that Scales 4 and 5 (Sociable and Confident) would increase with treatment; that expressed concern scales would decrease with treatment; and that there would be no significant differences in the pre-posttest scores for each of the untreated groups. However, the abnormal untreated group did evidence a similar decrease in Scales 2 and 8 and an increase in Scales 4 and 5 on repeat measurement. Finally, the hypotheses regarding the sensitivity of Scales 2 and 8 to the crisis of hospitalization were supported.

To Ron

and to Ryan

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TABLE OF CONTENTS

LIST OF TABLES

Page

LIST OF APPENDICES

CHAPTER I

THE PROBLEM

Introduction

Through the years a variety of objective psychological tests have been developed for use with children and adolescents. Among the criticisms of these instruments as a whole are that many of them evidence a relative lack of psychometric sophistication currently available, and/or they are designed for use with younger children or adults and thus lack the developmental specificity for adolescent concerns, and/or that they lack grounding in an integrated theory of personality and psychopathology.

Among the available broad-band personality assessment devices, the Minnesota Multiphasic Personality Inventory (MMPI) is firmly established as the most widely used instrument in the literature (Lanyon, 1984). For adolescents, however, the MMPI poses the difficulty of being quite long, and despite the availability and validity of adolescent norms, the MMPI was originally developed for use with adults (Widiger, 1985).

Likewise, the California Psychological Inventory (CPI) was developed for use with adult populations and later applied to adolescent populations (Widiger, 1985). Gynther (1978) addressed the question of the usefulness of the CPI and found that counseling of high school and

college students by means of this test has apparently proved to be rewarding to both counselors and counselees, but no hard data are available to confirm this. Missing from his list of this instrument's potential uses was mention of its applicability as a diagnostic tool for clinical populations of adolescents.

Other instruments such as the Personality Inventory for Children (PIC) and the Revised Behavior Problem Checklist (RBPC), as well as the Child Behavior Checklist, while designed for children and adolescents, were developed for rating by parents; and in the case of the RBPC, by anyone well acquainted with the child. A major limitation of the RBPC is lack of clear specification regarding who can reliably complete the checklist (Cancelli, 1985). Likewise, Reynolds (1985) noted that, regarding the PIC, the personality profile is to some unknown extent a function of the respondent. Finally, the Offer Self-Image Questionnaire for Adolescents, a broad-gauged measure of adjustment in adolescents, is recommended for the assessment of self-image and adjustment in normal populations (Martin, 1985).

In contrast, the Millon Adolescent Personality Inventory (MAPI), one of the newest self-report objective personality measures, was developed and constructed specifically with an adolescent population in mind. Like its predecessor, the Millon Clinical Multiaxial Inventory (MCMI), which was designed for use with adults, the MAPI was intended to supplant older instruments used for clinical assessment and, in this case, those used for adolescent evaluation.

The MAPI measures three basic dimensions, including Personality Style, Expressed Concerns, and Behavioral Correlates. There are 20

scales that measure these dimensions. The first eight are the Personality Style Scales, and these are based on Millon's theory of personality (Millon, 1969, 1981). The second eight are the Expressed Concerns Scales, which were derived from consultation with counselors and clinical psychologists involved through all phases of construction of the instrument. From this input the unique issues relevant to both normal and disturbed adolescents were ascertained. Although not specifically stated by the authors, the Expressed Concern Scales appear to be based on the developmental theories of Erikson and Havighurst (Brown, 1985). The last four scales, the Behavioral Correlates, were empirically derived to focus on behaviors that may have serious consequences for adolescents. These scales are used to provide a probability estimate that a subject belongs to "a troubled group" in a nonclinical population (Brown, 1985).

Influenced by the writings of psychometricians who published widely on how an objective personality test should be constructed from the late 1950s to the early 1970s, the MAPI and the MCMI were developed in a manner different from the procedures frequently criticized with the MMPI. The MAPI was constructed in accordance with three validation stages: theoretical-substantive, internal-structural, and external-criterion. The theoretical-substantive stage involved the development of items emanating from an explicit theoretical framework. Based on Millon's theory, a similar set of items was derived for the MCMI and geared for adults, and thus the MAPI is partially a replication of the MCMI. An internal-structural validation stage involved

retaining items that maximized scale homogeneity, overlapped appropriately with congruent scales, and maintained stability over time. The final stage, external-criterion validation, involved correlations of the MAPI with external criteria (Dyer, 1984).

Another of the distinguishing features of the MAPI lies in its theoretical ability to assess both the clinical symptomatology as well as more enduring personality traits as described by Millon's theory of psychopathology (Millon, 1969, 1981). In his theory, Millon emphasized the need to diagnose and evaluate the clinical symptoms and the underlying personality often associated with the clinical presentation (Millon, 1969, 1981). This is consonant with the current multiaxial approach to clinical evaluation. The MAPI thus purports to measure state and trait dimensions.

In summary, in spite of its newcomer status, the MAPI has distinguished itself as a rather compelling measure in the armamentarium of personality evaluation instruments and fills a void in the area of adolescent clinical assessment. However, Widiger (1985) cautioned that the commercial publication of the MAPI has preceded adequate empirical evaluation.

Need for the Study

Since the MAPI's development and availability as a clinical measure of personality, there has been no published research to date on its use as a treatment outcome measure for adolescent psychiatric inpatients. In fact, very little has appeared in the literature on the use of the MAPI on research populations other than those used by

the test developers and published in the test manual. The manual, however, does contain a compendium of 30 studies on the construction of the instrument and tests of its reliability and validity (Millon, Green, & Meagher, 1982). Essentially, the validation research preceded publication of the MAPI, which is quite unusual in the development of most psychometric devices.

Using the MAPI as a treatment outcome measure would yield further test-retest reliability data on a clinical population as well as lend further credibility to the MAPI as a measure of personality versus symptom factors, specifically with adolescents. Following a short-term course of treatment, greater stability of the eight basic personality scales of the MAPI should be observed than for the eight expressed concern scales.

In a related study on an adult psychiatric inpatient population, the Millon Clinical Multiaxial Inventory (MCMI) was evaluated as a treatment outcome measure (Piersma, 1986a). Piersma hypothesized that the presenting symptoms of patients would decrease in intensity during hospitalization as measured by the MCMI symptom scales. It was also expected that the underlying personality traits of individuals as measured by the MCMI personality scales would remain relatively unchanged or, at least, would show more stability than the symptom scales. Like the MAPI, the MCMI is a self-report inventory designed to differentiate symptoms from enduring personality traits. Piersma's results showed that the MCMI personality scales evidenced more stability than did the MCMI symptom scales. This study is reviewed in greater detail in Chapter II.

In another report of the study by Piersma (1986b), changes in the personality scales of the MCMI were observed following short-term treatment in adult psychiatric inpatients. Piersma found that Scales 1, 2, 3, and 8 of the MCMI (Schizoid, Avoidant, Dependent, and Passive Aggressive) decreased after treatment; and Scales 4, 5, 6, and 7 (Histrionic, Narcissistic, Antisocial, and Compulsive) increased after treatment. Thus, following treatment, patients were less withdrawn, introverted, dependent, and complaining and more outgoing, confident, assertive, and in control of their lives. The MCMI therefore appears to measure what can be considered healthy aspects of personality.

One potential outcome of this study is additional empirical evidence regarding the stability of abnormal personality traits in adolescents. There is clearly a void in the literature regarding this, as well as a well-known resistance and caution regarding the diagnosis of personality disorders in adolescence. It is theoretically believed that this is due to the vast hormonal, physical, cognitive, and emotional developmental changes of adolescence that have direct bearing on subsequent personality development. The authors of the MAPI entitled the eight personality scales the following: Introversive, Inhibited, Cooperative, Sociable, Confident, Forceful, Respectful, and Sensitive. However, the descriptions of these personality styles in the test manual reflect "the deeply etched and pervasive characteristics of the individual's functioning" (Millon et al., 1982, p. 42). The test developers suggested that because of the strains of adolescence or environmental adversity, the adolescent's

personality style may become problematic. Thus the question remains: After a course of short-term treatment that would be expected to reduce clinical symptoms, how stable does the underlying personality (whether generally healthy or psychopathological) remain?

Another question regarding personality measurement and the MAPI is: Are there aspects of personality traits as measured by the MAPI which can be considered healthy and thus be expected to increase following treatment? Along the same lines as was found in Piersma's (1986b) study, can Scales 4 and 5 on the MAPI, the Sociable and Confident Scales, be expected to increase following treatment? Clinical evidence (Green, personal communication, 1986), as well as Piersma's research, has suggested that Scales 4 and 5 of the MAPI should reflect that adolescents do become more confident and outgoing following treatment.

Purpose of the Study

This study was designed to evaluate the changes that took place on the MAPI scales between admission and discharge for a sample of adolescent psychiatric inpatients hospitalized in an acute treatment unit and to compare these changes with a group of normal adolescents who were administered the MAPI at two similar intervals. Another comparison group comprised adolescents who scored in the abnormal range on the first administration of the MAPI.

Another purpose of this study was to evaluate whether the MAPI personality scales evidence greater stability over time than the MAPI expressed concern scales. Additionally, mounting clinical evidence

has suggested that Scales 2 and 8 of the MAPI personality scales, the Inhibited personality and the Sensitive personality, are reactive to crisis. These two scales would thus be likely to be artificially elevated on admission to a psychiatric hospital and then demonstrate a reduction in magnitude as a result of resolution of the crisis and discharge (Green, personal communication, 1986). Piersma's (1986b) research supported the reduction following treatment in Scales 2 and 8 of the MCMI. Therefore, this study also attempted to determine if dimensions tapped by Scale 2, such as mistrust of others, resentment, and suspiciousness, and dimensions tapped by Scale 8, such as mood lability and acute awareness of intense conflicts, would be artificially inflated at the time of admission to a psychiatric hospital.

Research Questions

1. Does the MAPI measure personality traits which demonstrate greater stability following treatment than symptomatic concerns in a group of adolescent psychiatric inpatients?

2. In the absence of treatment, in a comparison group of untreated "abnormal" adolescents and a group of "normal" adolescents, do the personality trait scales as measured by the MAPI remain more stable than those of the treatment group? And, in the absence of treatment, are the symptomatic concerns as measured by the MAPI more stable in these two comparison groups than in the treatment group, but less stable than the personality trait scales?

3. Does the MAPI measure changes expected with psychiatric inpatient treatment? Do Scales 2 and 8 (Inhibited and Sensitive

Scales) decrease with treatment and do Scales 4 and 5 (Sociable and Confident Scales) increase with treatment? Are there any changes in Scales 1, 3, 6, and 7 in the treatment group? Do the symptom scales of the MAPI decrease with treatment?

4. Does a comparison group of untreated "abnormal" adolescents demonstrate no change between the first and second MAPI measure?

5. Does a comparison group of "normal" adolescents demonstrate no change between the first and second MAPI measure?

6. Are MAPI Personality Scales 2 and 8 sensitive to the crisis of hospitalization?

7. Using the comparison groups, does treatment make a difference in terms of decreasing the mistrust of others, resentment, lability, and the intense conflicts with others that Scales 2 and 8 measure?

Definitions

For the purpose of this study, "normality" and "abnormality" were defined in terms of the scores the adolescent obtained on the first administration of the MAPI. The normal adolescent was defined in terms of absence of psychopathology as measured by the MAPI. No more than one personality scale was elevated to a base rate of 80, and all remaining personality scale scores were at or below a base rate of 75. The abnormal adolescent was defined as obtaining base rate scores above 85 on at least two or more personality scales. The meaning and interpretation of a base rate score are discussed in greater detail in Chapter III.

Theory

The guiding theoretical system for the development of the personality style scales of the MAPI, Scales 1 through 8, is based on Millon's theory of personality (Millon, 1969, 1981). Briefly, this theory maintains that there are eight basic styles of personality functioning that can be constructed logically from a 4 x 2 matrix consisting of two basic dimensions. According to Millon, the first dimension is based on the adolescent's perception of sources of reinforcement (positive or negative). The manner in which the individual gains comfort and satisfaction in life constitutes positive reinforcements, and the avoidance of emotional pain is considered negative reinforcements. Experiencing few rewards in life, whether from self or others, an individual such as this is referred to as "detached." A "dependent" individual gauges his/her satisfaction and emotional pain by how others react to or feel about him or her. Those individuals who measure their satisfaction in life according to their own values and desires are described as "independent"; those who experience conflict over whether to rely on others versus their own needs are considered "ambivalent."

The second dimension of this matrix involves the coping mechanisms used to deal with the various types of reinforcement (active versus passive). Those individuals who are attentive, alert, arranging, and manipulating the circumstances of their environment are considered "active." "Passive" individuals initiate very little and demonstrate a resigned attitude while environmental events take their course. Table 1.1 shows the 4 x 2 theoretical matrix, including the

labels Millon et al. (1982) chose for the various personality styles in adolescence. Also included in this table is the parallel label for adult personality disorders as described in the MCMI.

Table 1.1: Millon's 4 x 2 Theoretical Matrix of Personality Styles

	DETACHED	DEPENDENT	INDEPENDENT	AMBIVALENT
PASSIVE	Introversive (MAPI Scale 1 (Schizoid-Asocial)	Cooperative MAPI Scale 3 (Dependent-Submissive)	Confident MAPI Scale 5 (Narcissistic)	Respectful MAPI Scale 7 (Compulsive-Conforming)
ACTIVE	Inhibited MAPI Scale 2 (Avoidant)	Sociable MAPI Scale 4 (Histrionic-Gregarious)	Forceful MAPI Scale 6 (Antisocial-Aggressive)	Sensitive MAPI Scale 8 (Passive Aggressive-Negativistic)

Millon identified three additional personality disorders not included in this matrix because they are distinguished from the first eight by several criteria, notably, the occurrence of psychotic episodes which are periodic and reversible, and deficiencies in social competence. These personality styles also differ in the degree of severity, being labeled moderately severe or the "borderline level" of psychopathology. They include the Borderline (Cycloid), Paranoid, and Schizotypal (Schizoid) personality disorders.

The eight scales of "Expressed Concerns" are not an integral part of Millon's personality theory. Rather, they appear to be founded on accepted tenets of developmental theory as suggested by Erikson and Havighurst (Brown, 1985). These scales are entitled (A) Self Concept, (B) Personal Esteem, (C) Body Comfort, (D) Sexual Acceptance, (E) Peer Security, (F) Social Tolerance, (G) Family Rapport, and (H) Academic Comfort. Millon et al. (1982) developed four additional scales as previously mentioned, the Behavioral Correlates, which are empirically derived scales and are not addressed in this study.

Overview of Remaining Chapters

In Chapter II, the relevant literature is reviewed in the following three areas: Millon's theory of personality development, current research validating the Millon instruments, and empirical and theoretical support for the stability of adolescent personality and psychopathology. The research design and procedures are presented in Chapter III, along with a discussion of the construction of the MAPI and validation research presented in the MAPI manual. In Chapter IV, the analyses of the results are presented. Conclusions and recommendations for further research are presented in Chapter V.

CHAPTER II

REVIEW OF THE LITERATURE

In this chapter, four areas of relevant theory and research are reviewed. First, Millon's theory of personality development and psychopathology is presented. Current research employing the operationalization of this theory, the Millon Clinical Multiaxial Inventory, and the Millon Adolescent Personality Inventory is reviewed. Finally, the evidence for the stability of personality and psychopathology in adolescence is presented.

Millon's Theory of Personality and Psychopathology

The revival of personality as central to the practice of clinical psychology is now apparent after what appears to be many years of a decline in both its theory and assessment (Millon, 1984). Among the various reasons for this renaissance, as noted by Millon, is the changing character of the individuals seen by professionals. No longer are the bulk of these patients severely disturbed, hospitalized psychotics, but rather, outpatients suffering from long-standing interpersonal conflicts and social inadequacies. While these patients often present with depression, anxiety, and a host of other DSM-III, Axis I disorders, it was Millon's contention that what gives substance and meaning to these illnesses is the underlying, ever-enduring, and

deeply ingrained patterns of maladaptive thinking, behavior, feeling, and interpersonal style that is called personality (Millon, 1969, 1981, 1984).

Thus personality, according to Millon, is characterized by both stability, that is, traits endure over time; and by consistency, that is, behaviors exhibited in one situation are observable in others. In his most recent publication, Millon (1984) explicated, for the 11 personality disorders as described and given status as diagnostic entities in the DSM-III: the behavioral presentation, interpersonal conducts, cognitive styles, affective expressions, unconscious mechanisms, self-perceptions, internal compositions, and intrapsychic organizations. It is these characteristics that endure consistently over time and give form to one's personality.

Behavioral presentation refers to what is observable in the patient's actions and verbalizations; for example, the behavior of the compulsive is organized and disciplined. The style of an individual's characteristic manner of relating to people is labeled the interpersonal conduct. For the schizoid personality, one observes an aloof detachment from others. The characteristic perception, attention, information processing, and communications comprise an individual's cognitive style. For example, the histrionic individual tends to avoid introspection and is attentive to superficial and fleeting events. Affective expression pertains to the individual's emotional character, intensity, and frequency. These are observable directly in what the person says about feelings, as well as indirectly in level of activity, speech quality, and physical appearance. Millon defined

unconscious mechanisms as internal processes that relate to self-protection, need gratification, and conflict resolution. Self-perception is defined as a self-identity, or an individual's sense of who he/she is. An example is the quality of the narcissistic personality's sense of self as "admirable." Internalized composition refers to the totality of memories, attitudes, and affects composed from one's past and significant experiences. Millon described the dependent personality, for example, as having "immature" inner representations. Finally, the general elements of a person's psychic interior is referred to as intrapsychic organization. In the case of the passive-aggressive personality, this is described as "discordant."

By what mechanism does the individual acquire these characteristic and enduring attributes? For Millon, the answer to this question is a theory of personality development identified as a "biosocial learning" theory. According to this theory, the child initially embarks on life's journey with spontaneous, unorganized, and unpredictable responses that are to some extent circumscribed by his/her constitutional disposition, or temperament and heredity. What is important about early experience is the variety and character of the alternatives the child experiments with in coping with the environment. However, these responses are evoking parental reactions. Learning is taking place, and over time what is need gratifying or painful becomes related to the child's actions. Because of a complex interplay of endowed capacity, energy, temperament, and environmental experiences, a shaping process takes place and ultimately becomes the

individual's preferred ways of thinking, feeling, behaving, and interacting.

To structuralize the personality even further, the child's early social environment is limited by a host of factors, including culture, parental endowments and abilities, and socioeconomic status to name only a few, such that preferred ways of being become repetitively reinforced. Hence a pattern of functioning becomes deeply etched and was described by Millon (1981), not as a "potpourri of unrelated perceptions, thoughts, and behaviors, but a tightly knit organization of attitudes, habits, and emotions" (p. 4).

Borrowing in part from the developmental theories which emphasize psychosexual stages and cognitive functions, Millon proposed a theory in line with neurological maturational periods. The rationale for this is that the individual's capacities are determined by heredity, but the rate and level to which growth and development are achieved varies with the amount and nature of stimulation. Millon's stages of development are as follows:

Stage 1: Sensory-Attachment. The first year of life is dominated by sensory processes and the need to form an attachment to others in order to have basic needs met. Interpersonal learning is characterized by the development of trust.

Stage 2: Sensorimotor-autonomy. This period marks the growing capacity to act autonomously. The child is learning self-competence.

Stage 3: Intracortical-Initiative. This period brings the ability to be verbal, rational, to plan and to symbolize, first concretely and then abstractly. The child is learning personal identity.

What is continually emphasized in Millon's theory is the differential effect of parental responses to the child during each of these stages, as either impoverishment or enrichment. From this complex interplay of developmental stages and parental responses (environment) Millon arrived at eight basic coping patterns and three severe variants by combining in a matrix the kinds of reinforcements individuals learn to seek or avoid (pleasure or pain), where they look (self or others), and how they behave (active or passive). Therefore, the nature, the source, and the instrumental behaviors give form to the personality type.

The primary sources of reinforcement, according to Millon, are dependent on others, independent of others, ambivalent about which way to turn, and detached from others. The instrumental behaviors are active, initiating and goal-directed or passive, and inert and resigned. From this typology the 4 x 2 matrix of personality types as described in Chapter I was formulated. The types are as follows:

1. Passive-dependent (dependent-submissive personality): These persons depend on others, await their leadership, are unambitious, helpless, and clinging. They are lacking in initiative and autonomy and thus search for relationships which can allow them to be passive.

2. Active-dependent (histrionic-gregarious personality): These persons use maneuvers with others to gain attention and approval.

Often they are sociable, demonstrative, and affectionate. There is a fear of genuine autonomy and a strong need for approval.

3. Passive-independent (narcissistic personality): These individuals rely on themselves, exhibit egocentric self-assurance, and superiority. They have little incentive to engage in reciprocal relationships. The attentions of others are taken for granted.

4. Active-independent (antisocial-aggressive personality): Expecting negative reinforcements, these persons counter with aggressive actions. They exploit and control others for personal gain. The expression of anger is notable, as well as a drive for power.

5. Passive-ambivalent (compulsive-conforming personality): These persons are inhibited, conforming, controlled, and perfectionistic. There is a mixture of subservience and anger which is controlled by a fear of loss of social approval.

6. Active-ambivalent (passive-aggressive-negativistic personality): These persons struggle between others' demands and their own desires, getting into repeated conflicts, restlessness, and discontent. Mood lability is notable, vacillating between anger and the resulting guilt.

7. Passive-detached (schizoid-asocial personality): These persons are apathetic, withdrawn, asocial, and unresponsive in human relationships.

8. Active-detached (avoidant personality): These persons are mistrustful of others, suspicious, apprehensive, and continually on

guard. While they intensely long for affection, they are notably watchful for fear of rejection.

How does an individual acquire a personality type which comes to be judged as abnormal? In answer to this question, a major theme becomes apparent: the interplay between intraorganismic and environmental forces. Thus, for Millon, pathology results from the same forces involved in the development of normal personality functioning. Important differences, however, occur in the nature, timing, and intensity of these influences. Millon believed that one rather crucial determinant in early development is parental acceptance of the child's individuality--that is, the evoked parental reactions to the child's temperament are basically accepting. Abnormal personality is viewed as the development of inflexible or defective coping patterns, the personal discomfort which results, and curtailed opportunities for learning and growth.

As a final point in this summary, Millon made the distinction between personality patterns, symptom disorders, and behavior reactions. The extent to which the observed pathology reflects ingrained traits versus situational difficulty is the distinguishing feature. At one end of the continuum is the personality pattern, a system of enduring ways of functioning. At the other extreme is a behavior reaction, which is a highly specific pathological response that can be attributed to a defined external event. In the middle lie the symptom disorders which for Millon, as stated earlier, derive their substance and meaning from personality patterns, but are also related to external stimuli. Thus a particular personality pattern is

particularly vulnerable to the expression of certain symptom disorders when confronted with an environmental event. Finally, while personality traits feel right to an individual (ego-syntonic), symptom disorders are experienced as ego-dystonic.

Research Employing the MCMI

Millon's theory of personality and psychopathology has been operationalized in his personality assessment instruments, the MCMI and the MAPI. It was Millon's position that, consistent with the DSM-III multiaxial approach to clinical evaluation, these instruments assess and differentiate between basic maladaptive personality characteristics and various clinical symptom syndromes. Because of its relatively recent commercial availability, little has been published regarding the MAPI's validity as an instrument which can adequately perform this distinction in adolescents. Of theoretical interest, in particular, is the notion of the existence of stable personality psychopathology in a younger age group. In the absence of empirical tests of this question, as well as the lack of tests of the MAPI's validity beyond that published in the manual, this literature review examines recent studies using the MCMI as a test of the theoretical validity of Millon's assertions.

The MCMI, like the MAPI, is a comparatively short instrument (175 true-false items) and designed to assess and distinguish personality traits from symptoms. Scales 1 through 8 assess basic personality styles (see Table 1.1). Scales 9 through 11 assess pathologic

personality styles of a periodically severe nature. Scales 12 through 20 measure disorders which are reactive and brief in nature.

Testing the position that Millon asserted, that particular personality types are disposed not only to definable patterns of cognition, affect, and behavior, but particular clinical symptoms as well, McMahon and Davidson (1985) examined the relationship between various personality styles measured by the basic and pathologic personality scales of the MCMI and the mood and symptoms states measured by the Profile of Mood State (POMS). Thus the personality Scales 1 through 11 of the MCMI were correlated with the six POMS scales: Tension-Anxiety, Depression-Dejection, Anger-Hostility, Vigor-Activity, Fatigue-Inertia, and Confusion-Bewilderment. These researchers cautioned that some of the relationships between personality style and symptoms, while consistent with Millon's conception of psychopathology, are at least partially based on item overlap between personality and symptom scales. They cited the example that 36% of the items of the Avoidant scale are also found on the Dysthymic scale. Indeed, Millon (1983) examined these expected relationships and reported item overlap and intercorrelations between MCMI personality scales and the various symptom scales in the MCMI manual. Building on Millon's work which demonstrated significant correlations with various MMPI and SCL-90 scales and the MCMI, the purpose of this study was to explore the relationships between MCMI personality scales and another set of independent clinical scales, the POMS.

Using a sample of 243 consecutively admitted white males participating in an alcohol dependence treatment program, McMahon and Davidson administered the MCMI and POMS during the first week following inpatient admission. The correlations between the scales of these instruments were found to be generally consistent with Millon's theory of personality, as well as the data published in the MCMI manual concerning personality-symptom scale relationships with the MMPI and SCL-90.

In particular, McMahon and Davidson found moderate correlations between the Schizoid scale (a pattern of limited awareness of self, indifference to others, impoverished emotional and cognitive processes, and behavioral expressiveness) and the Depression-Dejection and Confusion-Bewilderment scales of the POMS (.35). A moderate negative correlation was found between the Schizoid scale and the POMS Vigor-Activity scale. The MCMI Avoidant scale (a pattern of disturbing ideation, interpersonal hypersensitivity, and social isolation) was found to be moderately correlated (.35) with the Depression-Dejection, Confusion-Bewilderment, Tension-Anxiety, and Fatigue-Inertia scales of the POMS. A moderate correlation (.36) was found between the MCMI Histrionic scale (a measure of socially outgoing and seductive interpersonal style) and the POMS Vigor-Activity scale. The MCMI Narcissistic scale (measuring inflated self-image, interpersonal exploitiveness, and cognitive expansiveness) was also moderately correlated with the Vigor-Activity scale of the POMS (.34). McMahon and Davidson did not find the expected negative correlations with the MCMI Narcissistic scale and the POMS

Depression-Dejection scale. Likewise, the MCMI Antisocial scale (a pattern of independent and fearless self-image, and hostility and vindictiveness in interpersonal relationships) was not moderately correlated with the Anger-Hostility scale of the POMS. The MCMI Compulsive scale (measuring emotional restraint, social conformity, and a repetitive, highly structured life style) was moderately but inversely related to the POMS Tension-Anxiety, Depression-Dejection, Anger-Hostility, and Confusion-Bewilderment scales. Since Millon (1983) reported similar negative correlations with the MMPI Wiggins Depression, SCL-90 Depression, the MMPI Basic Depression, MMPI Wiggins Phobias, SCL-90 Phobic Anxiety, MMPI Wiggins Hostility, and the SCL-90 Hostility, the authors of this study concluded that the Compulsive personality includes healthy as well as pathologic characteristics. The MCMI Passive-Aggressive scale (measuring discontentment with self and others, emotional lability, and interpersonal ambivalence) was moderately associated with depression, anxiety, and hostility on the POMS, as well as in Millon's correlational studies with the MMPI and SCL-90.

Finally, McMahon and Davidson found moderate correlations with the MCMI Schizotypal scales and Borderline scales with the POMS Depression-Dejection and Confusion-Bewilderment scales and with the POMS Tension-Anxiety, Depression-Dejection, Fatigue-Inertia, and Confusion-Bewilderment scales, respectively. The MCMI Dependent and Paranoid scales failed to show any moderate correlations with POMS scales.

In another study, Piersma (1986), using 151 consecutively admitted adult patient males and females, attempted to demonstrate that presenting symptoms of patients (as measured by MCMI clinical symptom scales) would decrease in intensity during hospitalization and that underlying personality traits of individuals, as measured by MCMI personality scales, would show greater stability than the MCMI symptom scales. This study thus attempted to assess the validity of the MCMI's ability to differentiate symptoms from personality by comparing the stability coefficients for these scales. Before this work, little had been published regarding the use of the MCMI as a treatment outcome measure. The average length of stay for these inpatients was 35 days, and over 85% had a primary DSM-III Axis I diagnosis of an affective disorder. Patients were tested upon admission and discharge, and the mean retest interval was 30.43 days.

In Piersma's study, test-retest stability of the MCMI scales was obtained through correlating admission and discharge base rate scores. As expected, these correlations were influenced by the fact of the treatment program. Thus reliability data were contaminated by the change in clinical condition. However, Piersma hypothesized that the change for trait factors should be less than that for state factors.

The results of this study indicated that estimates of test-retest reliability were higher for the personality scales than for the symptom scales and that the absolute amount of base rate score change between admission and discharge was generally less for the personality scales than for the symptom scales. The MCMI Histrionic scale had the highest correlation ($\underline{r}$ = .75), while the Borderline scale had the

lowest (r = .27). Piersma explained this finding from a theoretical perspective, arguing that this scale taps lability in behavior and emotions and thus may be expected to change to a greater degree following treatment.

Piersma also found some symptom scales of the MCMI actually had higher test-retest correlations than the personality scales. The Drug Abuse and Hypomania scales had test-retest correlations of r = .75. Piersma argued that few individuals in this study were troubled by these symptoms; thus they were admitted and discharged with few complaints of this nature. The Anxiety, Somatoform, and Dysthymia scales had the lowest test-retest correlations, and the explanation was the converse: These were predominant symptoms among patients with affective disorders and therefore likely to change to the greatest degree with treatment.

Admission and discharge score differences on the symptom scales of the MCMI were significant in most cases in Piersma's study. Those scales showing no significant difference were the Drug Abuse and Psychotic Delusion, and a very small significant difference was seen on the Hypomanic scale. Again it is likely that these symptoms were not present to a great degree in this sample upon admission. The greatest change was evident with the Anxiety and Dysthymia scales which is consistent with the primary admission diagnoses.

With regard to changes on the personality scales from admission to discharge, significant changes occurred on all eight scales. Scores decreased on the Schizoid, Avoidant, Dependent, and

Passive-Aggressive scales, indicating, according to Piersma, that patients felt themselves to be "less withdrawn, introverted, dependent and complaining at discharge" (p. 498). Conversely, scores on the Histrionic, Narcissistic, Antisocial, and Compulsive scales increased, indicating patients felt "more outgoing, confident, assertive and in control of their lives at discharge" (p. 498). Two scales measured on the MCMI, but not the MAPI, the Borderline scale and the Paranoid scale, showed the greatest degree of change and no change, respectively.

McMahon, Flynn, and Davidson (1985a) examined the stability of the basic and pathologic personality and symptom scales of the MCMI in three distinct clinical samples. Again, consistent with the theory upon which the MCMI is based, higher stability estimates were found among basic personality scales in comparison with symptom scales. The Histrionic scale had consistently high stability coefficients ($\underline{r}$ = .80). High moderate range stability coefficients (between $\underline{r}$ = .70 and $\underline{r}$ = .80) were found for the Avoidant and Compulsive scales. The Schizoid, Narcissistic, Antisocial, Schizotypal, and Hypomanic scales had stability coefficients in the low moderate range ($\underline{r}$ = .60 to $\underline{r}$ = .70). The subjects in these samples were (a) 96 inpatient alcoholics who completed the MCMI at intake and 30 to 45 days into treatment and (b) 33 drug abusers being treated in either an inpatient or (c) an outpatient program who completed the MCMI at intake and 1 month and 3 months after admission to treatment.

Piersma (1986b) also reported data from his study in relationship to studies assessing the stability of the MCMI scales done by McMahon

et al. (1985a) and those done by Millon (1983). In general, Piersma found that the inpatient sample of 151 as described earlier evidenced lower overall stability coefficients on the MCMI than did the other researchers. This occurred for seven of the eight basic personality scales and for five of the nine symptom scales. Piersma cautioned that his inpatient sample of respondents may have reported a greater degree of improvement on the second administration of the MAPI to "insure" their discharge although they were informed their responses would not affect discharge. Second, this study's subjects were likely to be in a greater degree of crisis at hospital admission compared to discharge, which would differentiate them from Millon's group which included outpatients, and the McMahon et al. (1985a) group who were tested at a midpoint in the treatment process. Overall, Piersma's results give further support to the reliability of the MCMI as a measure of personality style and clinical symptomatology in psychiatric inpatients.

In another publication, McMahon et al. (1985b) analyzed the data obtained from their samples of substance abusers according to repeated-measures *t*-tests to assess the degree of change between intake and 1 month into treatment on the MCMI personality scales. The MCMI Schizoid, Avoidant, Dependent, Passive-Aggressive, Schizotypal, and Borderline scales showed significant mean score decreases, whereas significant mean score increases were seen for the Histrionic, Narcissistic, Antisocial (alcoholics only), and Compulsive scales. The Paranoid scale failed to show any change between intake and 1 month

into treatment. These results are consistent with Piersma's (1986) findings.

Considering the symptom scales, both alcoholics and drug abusers in these studies showed significant mean changes on the Anxiety, Somatoform, Hypomanic, Dysthymic, Alcohol Abuse, Drug Abuse, Psychotic Thinking, and Psychotic Depression scales between intake and 1 month into treatment. Thus these authors demonstrated significant change on both personality and symptom scales of the MCMI which would call into question how well the MCMI measures ingrained and enduring personality traits. Once again, with treatment, such personality characteristics as withdrawal, introversiveness, dependency, and negativism appear to diminish, and social skills, confidence, assertiveness, and taking control appear to increase.

Observing these same changes in his study, Piersma (1986) explained that the pattern of personality change reflected a more flattened profile; that is, discharge base rate scores were less extreme than admission scores. This, he argued, may then demonstrate a response pattern on the MCMI at discharge reflecting a moderate amount of personality psychopathology. A greater degree of crisis may then inflate the pattern of personality psychopathology on the MCMI. This is consistent with Millon's theory, in which he stated that under psychic stress, the interplay between clinical symptomatology and the underlying long-standing characterological patterns becomes more apparent (Millon, 1969, 1981). Of particular note for this current study was the fact that Personality Scales 2 and 8 of the MCMI (the Avoidant and Passive Aggressive scales) decreased following treatment;

thus patients saw themselves as less mistrustful and in less intense conflict.

Piersma (1986c) also analyzed the factor structure of the MCMI to provide further validation for the symptom-personality trait distinction capacity of the MCMI. Using the same sample of 151 consecutively admitted psychiatric inpatients who were predominantly depressed, factor analysis with varimax rotation was computed and found to be similar for both admission and discharge scores. Five factors were found and described: Factor 1, accounting for 50% of the variance, was described as an avoidant or withdrawn interpersonal orientation. Factor 2 (24% of the variance) was found to be emotional and psychophysiological complaints of a neurotic nature. The dominant theme for Factor 3 was hostility, negativism, and belligerence in relationships, along with poor impulse control (13% of the variance). Factor 4 involved suspiciousness, distrust, and paranoid ideation and accounted for 7% of the variance. Finally, Factor 5, 6% of the variance, was described as assertion in interpersonal relationships. Piersma compared his results with Millon's (1982) general psychiatric population and Flynn and McMahon's (1984) drug-abuse population, concluding that the results were quite similar. However, Piersma emphasized that the inpatient sample, in contrast, demonstrated a clear factorial distinction between neurotic symptoms and personality traits and styles. Factors 1 (Interpersonal Withdrawal/Avoidance), 3 (Impulsivity, Negativism), and 5 (Dependency/Submission) were felt to be more characterological, and Factors 2 (Emotional Distress) and 4

(Paranoid Distrust/Delusions) were felt to be more changeable clinical symptoms. Caution was observed in interpreting these results since the inpatient sample was homogeneously depressed or anxious in nature.

Other studies have attempted to validate various scales of the MCMI. Using a sample of 148 undergraduate students, Auerbach (1984) found that the Narcissistic Personality Inventory (NPI) and the MCMI Narcissistic scale correlated significantly (r = .55). Because of the lack of consensus among psychoanalytic writers and Millon's conception of narcissism, Auerbach suggested that these results showed that the two scales measure some common entity, the nature of which is unknown. Psychoanalysts have argued that in addition to a pattern of grandiosity, expansiveness, and self-centeredness, covert dysphoria is also a part of this syndrome. However, Millon (1983) showed his Narcissistic scale to correlate positively with the MMPI Hypomanic scale and negatively with MMPI Social Introversion, Depression, Psychasthenia, and Schizophrenia. Thus, this author argues that either Millon was correct or that his scale taps only what analysts consider the defensive layer of narcissistic personality disorder.

Using the NPI as a measurement of narcissism in a sample of 50 psychiatric patients, Prifitera and Ryan (1984) found that it correlated highly with several of the MCMI subscales, namely, the Histrionic-Gregarious scale (r = .61), the Narcissistic scale (r = .66), and the Aggressive-Antisocial scale (r = .51). Since the MCMI scales are not orthogonal, these authors maintained that it is not unexpected that the NPI can be shown to share variance with MCMI scales other than the Narcissism scale. Traits characteristic of

histrionic personalities and those characteristic of aggressive-antisocial personalities (extraversion, power strivings, and manipulativeness) overlap with the narcissistic personality. This study therefore lends additional support to the validity of the MCMI Narcissism scale.

In a study by Flynn and McMahon (1983), it was shown that the MCMI Dysthymia and Psychotic Depression scales had low but statistically significant correlations with three items on a survey form developed for assessing depression in a drug-abuse population. Subjects in this study were 88 patients receiving treatment for drug abuse, and the survey assessed difficulty with getting out of bed in the morning, attempting suicide, and thinking about suicide, symptoms judged to be critical in the diagnosis of depression.

Using the idea that diagnostic comparison groups should be composed of individuals frequently confused with the population under study when investigating the clarity of a particular diagnosis, Robert et al. (1985) studied whether the MCMI could accurately identify persons with Posttraumatic Stress Disorder (PTSD). PTSD has been diagnostically confused with schizophrenia, antisocial personality, alcohol or drug abuse, atypical psychosis, paranoid disorder, anxiety disorder, and borderline personality. The results of this study demonstrated that the heterogeneous comparison group (consisting of personality disorder, schizophrenia, alcohol abuse, and affective disorder) and the PTSD group were significantly different. PTSD subjects were VA inpatients diagnosed by at least two clinical

psychologists according to DSM-III criteria. The comparison group was selected from a pool of 80 psychiatric patients in which a chart review established agreement on the diagnosis. The PTSD group had higher elevations and greater scatter on the MCMI. Although a discriminant function analysis accounted for 100% of the variance and correctly classified 88% of the patients, the authors cautioned that cross-validation studies are needed to establish generalizability of the results with other samples.

Another outcome of this study established a modified MCMI code which produced a correct PTSD identification rate of 60%. When used in conjunction with interview and history data, the authors proposed that this MCMI code type should offer clinical utility.

Bartsch and Hoffman (1985) investigated the emerging body of data supporting the idea that a useful taxonomy exists for alcoholics. These researchers administered the MCMI and MMPI to 125 male alcoholics admitted to a VA alcohol-treatment unit. Previous research had established that conceptually distinct personality subtypes are identifiable among alcoholics. The results of this research demonstrated five relatively homogeneous and distinct patterns and scores for the MCMI, which were related statistically and conceptually to MMPI scores in a manner consistent with previous research.

Flynn and McMahon (1984) investigated the factor structure of the MCMI. In this particular study, 139 MCMI protocols were generated from a census of 185 drug abusers receiving treatment. The factor-analytic results of these data were compared to data from two other groups reported in the MCMI manual: a general psychiatric sample and

a sample consisting of drug and alcohol abusers (Millon, 1983). What emerged from the analysis of these data on drug abusers was a stable factor which measures a negativistic-avoidant personality style with associated anxiety, depression, and somatization. Additionally, evidence for an asocial-avoidant factor measuring emotional detachment and social isolation emerged in all three samples.

In an analysis of the above 139 MCMI profiles of known drug abusers, Flynn and McMahon (1984b) also reported their findings regarding the validity and reliability of the MCMI Drug Abuse scale. As a total group, the drug abusers receiving treatment demonstrated base rate scores on the Drub Abuse scale in the clinically significant scoring range or "presence" of drug abuse, and far above those of the MCMI standardization group. In addition, scores on the MCMI at intake and 1 month and 3 months into treatment were not significantly different. Therefore, for this group, the Drug Abuse scale measured fairly enduring characteristics not influenced by short-term treatment.

Snibbe and Peterson (1980) used the MCMI, MMPI, and WAIS to describe a group of 47 workers' compensation claimants to provide insight into the possible characteristics of a sample from this population. A comparison group was not identified, nor did the researchers aim to determine how representative this group was or how valid the claims. In spite of these limitations, these 47 subjects were found to have remarkably similar MMPI profiles (elevation of the neurotic triad and Scale 8) as well as a primary personality style of

submissive-dependent on the MCMI. The most likely symptom scale elevation on the MCMI was anxiety and depression.

In a four-part series of published reports, a team of researchers (Antoni, Tischer, Levine, Green, Millon, 1985, 1985b, 1986; Levine, Tischer, Antoni, Green, & Millon, 1985) demonstrated the relationship between MMPI high-point code types which have been traditionally fraught with ambiguities and contradictions, and MCMI high-point codes. It was proposed that the MCMI high-point codes would provide personality-oriented descriptions which would enrich the symptom-oriented nature of the MMPI, as well as lend clarity to the contradictory behavioral, interpersonal, and emotional descriptors often seen in these particular MMPI code types.

In this study, reported in four parts, the MMPI code types 28/82, 27/72, 24/42, and 89/98 were identified among 3,283 patients over an 18-month period. A total of 46 clinicians reviewed cases in which both the MMPI and MCMI were administered within a 1-week period in their settings.

The results of the covariation analysis between the four MMPI code types and the various MCMI high-point types were useful in identifying subsets of patient types within each MMPI code. This research group concluded that the use of an "objective test" battery made up of the MMPI and the MCMI can contribute to identifying subtle distinctions within apparently uniform diagnostic groups.

Finally, Van Gorp and Meyer (1986), noting an absence of like studies, investigated how well the MCMI detects faking or malingering. The subjects, 95 psychiatric patients and 90 medical/surgical

controls, were given the instructions to either fake good, fake bad, fake a role as a conscientious Air Force officer, fake a role as an unfit Air Force officer, or fake a neutral role as an Air Force officer. Highly descriptive vignettes were provided to subjects to create the role set. The subjects were randomly selected. The MCMI primary index of frank malingering is the Weight Factor. It was hypothesized that no significant differences would be found between those responding with traditional instructions, those with social role sets, and those using a neutral role. The results indicated that the MCMI detected the profiles in both fake bad conditions for both subject groups, but not for the fake good conditions. Thus, the authors concluded that in cases in which an individual wishes to create an unrealistically positive impression (e.g., custody battles), it would be advisable to use another measure known to be more sensitive to faking good test-taking sets.

Research in Progress Involving the MAPI

To date only one study has appeared in the literature regarding the use of the MAPI as a validating instrument in the development of a test to measure separation-individuation in adolescence (Levine, Green, & Millon, 1986). The Separation-Individuation Test of Adolescence (SITA) was derived from Mahler's theory of early childhood separation-individuation. Seven dimensions of this process were hypothesized, resulting in seven scales. To establish external-criterion validation, 181 adolescent subjects completed the SITA and the MAPI. Examination of the relationship between scores on the MAPI

personality scales and the SITA's scales provided appreciable levels of external validity for the SITA.

Of particular note in this study is that the highest mean score on the SITA's Self-Centeredness scale was obtained by the MAPI Confident personality scale. The MAPI personality scale scoring highest on the SITA Need Denial scale was the Angry-Irritable (Antisocial) group. Since this personality group is noted for rejection of closeness, there is support for this SITA scale. The MAPI Friendly-Agreeable and Dependent-Conforming groups scored higher on the SITA Interpersonal Enmeshment and Nurturance-Succorance scales, respectively. Finally, the MAPI Anxious-Moody personality scale scored highest on the SITA Separation-Anxiety scale.

A number of other unpublished studies using the MAPI were presented at the Millon conference in March 1986 in Miami, Florida. Zupkus presented her abstract on the use of the MAPI to differentiate among normal, emotionally disturbed, and delinquent adolescents. A sample of 60 subjects composed each group. Discriminant-function analyses showed that on the basis of all 20 MAPI scales, group membership was predicted among all three groups with 60.5% accuracy and between the normal and pathological groups with 76.1% accuracy. In addition, this study identified the Forceful and Sensitive personality styles as more frequent among maladjusted adolescents than among normals.

Watchman presented research at the 1986 Millon conference which employed the MAPI to separate 129 nondepressed and depressed

adolescents into three distinct pathological personality clusters. Watchman noted that recent research has suggested that meaningful subtypes exist within the broader category of depression. Two qualitatively distinct subtypes for adolescents were found to be Dependent-Intropunitive and Independent-Extrapunitive. Results demonstrated that personality style as measured by the MAPI emerged as a salient factor in determining an individual's response to coping with depression. A Depressive Subtype Survey (DSS), a self-report adolescent inventory containing subscales measuring depressive subtypes, was constructed, and significant theoretically consistent differences between the MAPI personality scales were found on the DSS subscales of intropunitiveness, extropunitiveness, independence, and dependence. Overall, the findings demonstrated that high scorers on MAPI Scales 1, 3, and 7 (Introversive, Cooperative, and Respectful scales) used denial and changed very little when depressed; high scorers on MAPI Scales 6 and 8 (Forceful and Sensitive scales) became more aggressive when depressed; and high scorers on MAPI Scales 2, 8, and 3 (Inhibited, Sensitive, and Cooperative scales) became highly intropunitive.

Tracy presented impressions of the clinical utility of the MAPI gleaned from experience with 230 adolescent inpatients and outpatients. It was recommended that the MAPI be used in conjunction with a standard psychological test battery wherein data can be cross-validated, or in place of projective testing in the frequent case of adolescent nonproductivity on these types of tests. Tracy noted that his clinical experience with the MAPI revealed its relative weakness

in the area of diagnosis of more severe Axis I pathology, including psychosis and major depression.

Pantle and Wassink (1986) conducted a research study using the MAPI as a discriminator of suicidal groups of inpatient adolescents selected from a crisis-treatment unit of a psychiatric hospital. Subjects were 108 adolescents, 24 of whom had attempted suicide, 34 who had threatened suicide, and 50 who had not demonstrated suicidal behavior before admission. No significant differences were found on the MAPI between the group threatening suicide and those not demonstrating suicidal behavior. However, the group who had attempted suicide had significantly higher scores on Scales 2 and 8 and significantly lower scores on Scales 4 and 5 of the MAPI.

Another unpublished study (Pantle & Houskamp, 1986) examined the differences in MAPI scores between adolescents with a history of sexual abuse. Three groups of 18 subjects each were defined, those having experienced documented severe sexual abuse, a moderately abused group, and those who had not been sexually abused. The groups were matched by age, sex, and diagnosis and were admitted at the same time of year. It was found that Scales 2, B, E, and F of the MAPI were significantly higher in the two sexually abused groups and Scales 4 and 5 were significantly lower. Additionally, as the severity of abuse increased, Scales 4 and 5 declined and scales E and F increased with the level of severity of abuse. Thus these severely abused adolescents saw themselves as less confident and outgoing and as

having greater difficulty with peer relationships and tolerance for others.

The final section of this literature review examines the evidence for enduring psychopathology in adolescence.

Adolescent Psychopathology: Normative Crisis or Stable Disorder?

Previously held beliefs that childhood psychopathology bears little to no relationship to adult psychopathology have been repeatedly challenged by research over the past decade. For example, when considering children, Waldron (1976) found in a retrospective analysis of 42 young adults that, upon follow-up, 75% of these adults diagnosed as neurotic in childhood had some later form of adult psychopathology compared to only 15% of a well-matched control group who did not. An additional effort, referred to as the Isle of Wight study, investigated 10- and 11-year-old preadolescents with emotional problems. These children were more than twice as likely as the general population to show emotional disturbance at age 14 to 15 (Rutter, Tizard, Yule, Graham, & Whitmore, 1976). Likewise, Cass and Thomas (1979) demonstrated a 44% rate of moderate to severe adjustment difficulty in adulthood in a follow-up study of neurotic children.

As for adolescence, what comes to be classified as abnormal development is dependent upon how age-appropriate and how predictive of future psychopathology the behavior in question is viewed. Weiner (1982) noted, however, that this distinction for adolescents has been blurred by the notion of what constitutes "normative adolescent turmoil." Current psychoanalytic theory holds that the clinical

picture of the symptomatic adolescent is often due to "adolescent turmoil" and therefore will subside with growth (Blos, 1962; Deutsch, 1944; Erikson, 1968; Freud, 1958; Josselyn, 1954).

The contrasting argument presented by Weiner (1976, 1980, 1982) is that this idea of transient turmoil in adolescence is a myth. Observing traditional epidemiological data, as well as current clinical trends, the diagnosis of situational disorder predominates among adolescents and is seen much less frequently in adults. However, whether this "adjustment reaction of adolescence" category is largely a pattern of normative adolescent psychological processes, or whether this represents a "much overused diagnostic category applied by clinicians who are unable to recognize or unwilling to label the early stages of psychopathology in adolescents" is the question (Weiner, 1980, p. 448; 1982).

In support of the stability of adolescent psychopathology argument, Weiner and Del Gaudio (1976) conducted an epidemiological study which offered conclusive evidence on the degree of continuity between adolescent and adult psychopathology. Information from the cumulative psychiatric case register of Monroe County, New York, yielded a cohort of 1,334 adolescents, age 12 to 18. This survey thus yielded a large and widely socioeconomically diverse sample from which the following conclusions were drawn. The most common diagnoses among this sample of adolescents were personality disorders (31.4%). Additionally, over 10 years of this retrospective analysis, 54.1% of the subjects revealed diagnostic stability and had returned for further

treatment. If these disturbances had been largely maturational, this percentage is far greater than would be expected. Weiner and Del Gaudio found a 60% overall diagnostic stability in adolescents as compared to 76.7% found in adults.

An unusually well-designed recent epidemiological study established the prevalence rate of psychiatric disorders diagnosed according to DSM-III criteria in adolescents at 18.7% (Kashani et al., 1987). Subjects in this study were 150 adolescents, age 14 to 16, with equal numbers in each age and sex category. Phone contact was used to recruit subjects, and efforts were made to keep the refusal rate low such that the participation rate was maintained at 72.4%. Another important feature of this study was the well-controlled and rigorous procedures used to train the psychology doctoral candidates as data collectors and to establish interrater reliability. A variety of measures were used, including a structured psychiatric interview for the adolescent and one parent; the Achenbach Child Behavior Profile was given to the parent; and the Parental Bonding Instrument, the Conflict Resolution Scale, and the Piers-Harris Children's Self-Concept Scale were administered to the adolescents.

The Kashani et al. (1987) study also established a unique definition of "caseness" as including those individuals who not only met DSM-III criteria for a disorder but were also rated as needing treatment. Results of this study included the finding of the 18.7% prevalence of psychiatric disorder rate as well as a predominance of three diagnostic categories: conduct disorder, anxiety disorder, and depression. Socioeconomic status and race did not distinguish the

disordered adolescents, nor did divorce or parental separation. What did positively correlate was a history of physical abuse, early sexual relationships (by the time of the study), and cigarette smoking. The diagnosed adolescents were also more likely to resolve conflict through verbal and physical aggression and to have a significantly lower self-concept. Boys were given higher "externalizer" ratings by their parents on the CBP, and girls were more likely to suffer from somatic complaints. Finally, parents were described by the diagnosed adolescents as significantly less caring. The small sample size and the exclusion of institutionalized adolescents dictate limitation in the extent to which these findings can be generalized. However, this research significantly improved on the documented tendency of structured interviews to overestimate psychopathology by adding the severity scale and need for treatment criteria as a method of increasing diagnostic reliability.

The work of Erik Erikson (1968) on adolescence has led to a description of the normative developmental task for this age group as identity formation versus identity diffusion. Some of the behavioral manifestations of what Erikson referred to as a "normative crisis" may be mood swings and unpredictability. This same behavior in another age group would be considered unhealthy. In addition, years of folklore have fostered the idea that alienated rebelliousness is the normal pathway of development through this period. Three persistent beliefs among clinicians (Weiner, 1980) have resulted: Most adolescents evidence signs of disturbance that are not really

psychopathological; it is quite difficult to make the distinction between normal and abnormal development in adolescence; and what does appear to be pathological adaptation in adolescence will subside.

Indeed, mounting empirical evidence has confirmed the existence of adolescent characterological stability. One of the best known longitudinal studies of adolescence is the Normal Adolescent Project conducted by Offer and Offer (1975). The sample consisted of 73 typical middle-class midwestern males; of these, 8-year follow-up data were collected on 61, or 84%. Offer and Offer endeavored to study adolescents who were not psychiatric patients nor delinquent, and who seemed to be functioning at a middle range in most areas of personal and social adjustment. The Offer Self-Image Questionnaire was designed to assess this functional aspect of these adolescents and was administered to 373 freshman boys to obtain a modal group. Teacher ratings were used as a check on the questionnaire results, and parents also rated their children at this time. Those subjects who were selected for their normalcy were evaluated at least yearly for 4 years via a semistructured psychiatric interview. Psychological testing included the Rorschach, TAT, and an IQ test, and these were independently administered, as well as sociologists' interviews of subjects and parents. Follow-up data in the four post-high-school years were obtained via subjects' self-ratings of their adjustment, parental ratings, two additional psychiatric interviews, and a second series of psychological tests. The variety of data-collection procedures, the degree of follow-up, and the size of the sample all make this study

one of the most important contributions to the literature on adolescence.

An examination of the clinical data as well as factor analysis of 55 variables resulted in three clinically meaningful subgroups. Offer and Offer referred to three developmental pathways through adolescence: the continuous growth group, surgent growth, and tumultuous growth groups. The "continuous growth group," representing 20% of the sample, grew continuously and easily through the years from 14 to 22. They were purposeful, self-assured, had stable family lives, and handled external events and inner feelings with flexibility and free flow of emotional expression. They had a clear-cut sense of identity. Parents encouraged these youngsters' independence and were affectionate and flexible. These young men had heterosexual relationships with few difficulties. As problems arose over the years, their coping responses approached the ideal.

The "surgent growth group," 33% of the sample, showed a developmental pathway of ups and downs. While growth was overall adaptive, it was characterized by periods of progress toward maturity and then by developmental standstills. Self-worth in these young men wavered constantly, and self-defeating actions were conspicuous but limited. Their families suffered moderate degrees of severe illness, death, or separation. Open conflict between parents and children was frequent but not overwhelming. These subjects were likely to be more passive and at times became depressed. Friendships were less constant and sexual feelings created anxiety.

The "tumultuous growth group," representing 20% of the sample, displayed more behavior typical of the chaotic view of adolescence. These teenagers openly admitted pain and anguish, were in constant turmoil, and lacked adequate coping mechanisms. Family turmoil, marital conflicts, and mental illness were conspicuous. Separation from home evoked much conflict, and although peer relationships supplanted parental support for individuation, they were often fleeting. These boys were immature, clinging, and dependent.

It is critical to note that the results of the Offer and Offer study cannot be applied to all adolescents as only middle-class suburban males were observed. Nevertheless, this study supports the notion that rebelliousness, repudiation, and defiance are not essential for moving through adolescence. However, there appears to be a significant and sizable subgroup, approximately 20%, for whom indications of personality upheaval are not only striking but enduring.

In another study of normative adjustment in adolescence, Grinker, Grinker, and Timberlake (1962) reported on their attempt to describe the mental state of young adult males who were classified as healthy. Preliminary tests including the Taylor Manifest Anxiety Scale, Mandler's Perception of Feeling, Barrons's Ego Strength Scale, and Nowlis's Adjective Check List were administered to 140 college-age males to select subjects scoring within a healthy range. Thirty-one selected subjects were interviewed and described as nonimpulsive, accurate and honest in their self-image, possessing early work experience, experiencing firm and fair discipline at home, effective

interpersonally, athletically proficient, and as having a strict religious upbringing, mild affective responses of depression and anxiety at times, but as having effective coping mechanisms. Another group did not elect to be interviewed.

On the basis of an extensive questionnaire, designed to tap family, social, and cultural background, these researchers classified 77 subjects as well adjusted, fairly well adjusted, and marginally adjusted. Significant differences were found between the two extreme adjustment groups, indicating that the marginally adjusted group experienced some difficulties in a variety of areas of personality functioning. While this study was primarily descriptive in nature and dealt with an all-male population from a conservative college setting, it nevertheless supported the previously discussed study in finding that the majority of subjects demonstrated that adolescent development is not by definition psychopathological.

In a follow-up study 14 years later, Grinker and Werble (1974) obtained completed questionnaires on more than half of the original subjects. Signs of disorders were not the hallmark of the group as a whole, although evidence of what was judged to be nonsevere depression was found. Although it is not possible to generalize the findings of this study because of the high nonresponse rate, these authors concluded that because the modal response to the majority of questions dealing with signs of disorder was "never" or "rarely," these individuals sustained their relative mental health into the third decade. The interpretation of these data was to some unknown extent a

function of the difficulties inherent in self-report data-collection methods.

Marcia (1966, 1980) has been noted for his extensive work in the area of ego identity. Building on the work of Erikson, he described, measured, and validated four possible pathways or resolutions of the hypothesized identity crisis occurring in adolescence: identity achievement, identity diffusion, moratorium, and foreclosure. An individual classified in the identity-achievement category has experienced a crisis period and is committed to an occupation and ideology. Identity diffusion is characterized by a lack of commitment and decision regarding an occupation. The moratorium category appears to be a crisis period in which there is an active struggle to make commitments. Finally, the foreclosure category is characterized by having expressed a commitment without a crisis period and thus becoming in life what others have desired the person to be.

In Marcia's (1966) validation of the concept of ego identity study, 86 college males were categorized into the four identity statuses on the basis of an individual semi-structured interview used to identify the individual's identity status and an incomplete-sentences blank. Interviews were tape-recorded and replayed for judging. Interrater reliability was found to be .75. A stressful concept-attainment task assessed two prime areas of ego function: moderating between stress-produced anxiety and external demands. Subjects higher in ego-identity status performed best on the concept-attainment task. Once again, this study offers support for the notion of the existence of varying developmental pathways through adolescence

which can be indicative of greater or lesser degrees of ego identity and thus having predictive implications for future adjustment.

Vaillant (1978) conducted a 35-year prospective follow-up study with multiple ratings by independent judges blind to the other assessments. Ninety-four college sophomore males were selected and judged free of emotional, physical, and academic difficulties by an internist, a physiologist, an anthropologist, a psychologist, and a psychiatrist. Over 35 years the men were followed by extensive biennial questionnaires and a home interview at age 30. This study attempted to measure "quality of object relations" on the basis of high school social adjustment, adult friendship patterns, marital satisfaction, outcome of children, and maturity of defenses. Methodological limitations in this study included the all-male sample obtained from an intellectually ambitious, highly educated segment of society as well as a heavy reliance on self-report. Nevertheless, long-term prospective follow-up is a powerful research technique, allowing concealed truths the chance to surface.

The results demonstrated that five times as many of the poorly adjusted men (those whose overall adult adjustment over the three decades was uniformly least successful) had below-average childhood environments. At age 50, the antecedents of poor midlife social adjustment were found to be a cold childhood environment, poor adolescent social adjustment, mentally ill parents, prolonged maternal dependence, and being an only or an oldest child. Quality of fathering (retrospectively assessed at age 18) seemed more powerfully

correlated with midlife object relations than did quality of mothering. Overall, the author concluded that the capacity for object relations is a relatively stable and continuous dimension of personality.

Other studies, using a longitudinal design, have attempted to establish the persistence of personality characteristics using various assessment devices. A study of 31 male and 33 female adolescents, age 14 to 16 years, who were followed to age 30 (Bronson, 1967) demonstrated that two dimensions, emotional expressiveness and reactivity-control, represent characteristics that are among the most stable throughout development. Scores along both dimensions, expressive-outgoing versus reactive-explosive, were obtained at four periods, early childhood (5 to 7 years), late childhood (8 to 10 years), early adolescence (11 to 13 years), and late adolescence (14 to 16 years). Although this was an unusually thoroughly tested group of subjects and a well-designed study, the dropout rate for respondents raised the question of whether the remaining subjects represented the general population. In fact, an analysis of subjects who continued versus those who did not found that men who did not return for follow-up were more reserved and withdrawn. The author concluded that scores on both dimensions were the most persistent and the most predictive of other characteristics, when correlated with independent Q-sorts of the adult interviews.

Two other studies (Schimek, 1974; Woodruff & Birren, 1972) demonstrated the longitudinal persistence of personality characteristics from adolescence to adulthood on assessment devices. Schimek found that primary-process manifestations on the Rorschach on 27 male

subjects, tested at age 14 and 24, seemed to be mediated by stable aspects of an individual's cognitive abilities and cognitive style. This all-male subject pool was from predominantly Jewish middle-class homes. The Rorschach protocols were scored by two raters according to the Holt primary-process scoring system. At age 24 it was found that there was generally a decrease in the percentage of primary-process responses and an increase in "adaptive regression." Adaptive regression was found to be significantly correlated, at both ages, with Verbal and Performance IQ, field independence, and the degree to which the overall Rorschach record showed a predominance of intellectualization as a defense style. The author concluded that this high level of consistency of individual differences on all measures over a 10-year period indicated that these were stable characteristics.

Woodruff and Birren (1972) administered the California Test of Personality to three adolescent cohort groups at mean ages of 19.5, 19.6, and 16.2. These adolescents were tested again 25 years later and were found to have very small objective changes in personality. This study used both a longitudinal and cross-sectional design by concurrently testing college-age students at the time of the follow-up, thus attempting to eliminate the confounding of age and cohort differences. It was found that objective cohort differences were much greater than objective age changes from adolescence to middle age.

A more phenomenologically conducted study by Lief and Thompson (1961) on 17 subjects over a 15-year time span revealed that a psychiatrist interviewing an adult subject "blind" or without the

record of the subject's adolescence and another psychiatrist reviewing old records were able to identify a remarkable persistence of psychological patterns. These investigators found that the ego mechanisms for dealing with drives, conscience, and reality were quite consistent from adolescence to adulthood. Additionally, very accurate predictions were made through old records on the current adjustment of the subjects. The question of bias in this design as well as the very small sample size must be considered when interpreting the findings.

The final group of studies to be reviewed attempted to establish the continuity between adolescent maladjustment and adult psychopathology. As Weiner (1980) indicated, "For better or for worse, this means that adults tend to display many of the same general personality characteristics and the same relative level of adjustment they did as adolescents" (p. 30). Masterson followed a group of adolescents diagnosed with borderline personality disorder over the period 1967 through 1974. He presented compelling evidence that supported the theory that the borderline syndrome is a stable diagnostic entity. Masterson's studies therefore demonstrate that adolescents with obvious symptoms of behavior disorder do not outgrow them. "Those who appear disturbed are likely to be disturbed and to remain disturbed unless they receive adequate treatment" (Weiner, 1982, p. 30).

Masterson's comprehensive longitudinal study of symptomatic adolescents began in 1954. By follow-up methods an effort was made to distinguish illness in need of treatment and those whose symptoms were indicative of adolescent turmoil and would subside with growth. Three psychiatric interviews with the patient and mother were conducted over

5 years. The results of this study must be evaluated in light of the fact that diagnoses were established by psychiatric interview alone and that outcome was assessed by a review of the treatment record. On the basis of these data on 72 adolescent outpatients, it was found that adolescent turmoil was at best merely an incidental factor. Sixty-two percent of the patients continued to demonstrate moderate or severe functional impairments. Indeed, the overwhelming evidence was that 5 years later these patients had not grown out of their illnesses (Masterson, 1967).

Following this realization, Masterson (1980) initiated the evaluation of treatment outcome study. In this investigation, 31 patients from upper-middle-income families and of at least average intelligence were admitted to a hospital at a mean age of 15.7 years, and the mean length of stay was 14.5 months. Treatment was based on Masterson's developmental theory of the genesis of the borderline condition. According to this theory, this syndrome represents a developmental arrest at the time of the separation-individuation stage from the mother. Follow-up contacts occurred following discharge at a mean of 3.9 years, when the patients ranged from 16.8 to 25.1 years of age. Masterson found that 58% of the 31 patients had maintained their improvement 4 years later, thus demonstrating that treatment was an important variable in determination of outcome, rather than developmental change.

The next three studies reviewed provide evidence regarding the long-term prognosis for adolescents requiring psychiatric

hospitalization. The bulk of the evidence is that these individuals remain at risk for adult psychopathology. Also, severity of illness appears to predict the degree of later adjustment.

Herrera, Lifson, Hartmann, and Solomon (1974) reported on a 10-year follow-up study of a population of 55 young adults who had been hospitalized as adolescents between the ages of 14 and 17. Observations by multidisciplinary staff were acquired during treatment, thus eliminating retrospective bias. Follow-up data were obtained 10 years following discharge, principally by means of loosely structured interviews of patients, family, and/or therapists in which data were obtained in the areas of family relationships, school-work adjustments, social relationships, and overall adjustment. Ratings of good, fair, or poor were assigned. A subject showing mediocre adjustment in one area may have merited an overall rating of "good" if there was evidence of compensation by effective functioning in another area. Complete data were obtained on 78% of the subjects. A severe methodological flaw for this study was that follow-up data were obtained from mothers alone on 5% of the sample.

Results of this investigation showed that 10 years after discharge, only 21% could be described as capable of warm, mutually gratifying social relationships. In fact, social relationships were consistently the area of greatest failure for the cohort. Sixty-seven percent had insignificant or superficial social relationships. Performance in the area of school-work adjustment was an area of modest compensation for most of the subjects. Nevertheless, subjects were frequently described as unhappy or bored with their jobs. Thus

the majority of subjects were seen as still poorly adjusted, on the basis of the degree of social incapacitation.

In another follow-up study of 55 adolescents treated in a psychiatric hospital, Gossett, Barnhart, Lewis, and Phillips (1977) conducted a personal clinical interview between 26 and 48 months post-hospitalization to establish correlates of outcome. The interview explored the ex-patients' current living conditions, peer relationships, current psychopathology and drug and alcohol abuse, legal difficulties, academic and work functioning, subjective contentment, and plans for the future. Parents and/or spouses also provided an evaluation. Thus clinical data collection provided fairly comprehensive information on these subjects, and a consensus of degree of improvement and level of current functioning (rated good, fair, or poor) was achieved through discussion among three psychiatrists and two psychologists. The variables postulated to affect outcome were (a) severity of psychopathology, (b) onset of symptomatology (seen as related to severity), (c) type of hospital treatment termination, (d) post-hospitalization treatment, (e) pre-hospitalization history of destructive physical behavior, and (f) energy level. Of all the measures available, early childhood onset of symptomatology and thus severity of psychopathology as opposed to a reactive process was the highest predictor of a negative outcome. In a multivariate regression analysis, the onset of symptomatology scale was the best initial predictor of outcome, and the addition of energy level increased the power of the outcome prediction.

Finally, Welner, Welner, and Fishman (1979) followed 77 adolescent psychiatric inpatients by personal interview 8 to 10 years following discharge. Information from a relative (often the mother), clinic records, school records, and treating psychiatrists was obtained "when feasible." Follow-up diagnoses were made independently of the diagnosis established at the index hospitalization. Only 23% of this group was later found to be free of mental illness. The most important finding of this study was that the prognosis for patients diagnosed with adolescent-onset bipolar affective disorder was particularly poor. Twenty-five percent of these patients had committed suicide, and the remaining nine were chronically symptomatic and severely disabled. It should be noted that while this study supported the argument for stability of psychopathology in adolescence, the follow-up methods were not adequately controlled or described.

Summary

In summary, the data provided compelling evidence for the continuity of personality characteristics from adolescence to adulthood as well as the persistence into adulthood of psychopathology identified in adolescence. This group of studies presented does not exclude those with results to the contrary. As Offer and Offer (1975) stated, there are no studies that contradict the evidence for stability. In contrast, then, to the traditional view of adolescence as a period of normative turmoil which is considered to be psychologically disruptive and not predictive of future adjustment, Weiner and Del Gaudio (1976) noted that (a) psychological distress of a reactive

nature is not a normative feature of adolescence; (b) normality and abnormality boundary lines can be distinguished in adolescents; and (c) psychological disturbance in adolescence, if untreated, will not disappear with maturation.

This review of the literature has presented Millon's theory of personality development and psychopathology which underscores the existence of persistent and continuous personality patterns which really gives form and substance to symptom presentations. He has developed personality assessment instruments, the MCMI as well as the MAPI (along with Green & Meagher), which attempt to operationalize his theory of personality types and to distinguish symptoms from traits. The MCMI is presently being validated by a growing body of empirical evidence which was reviewed. The newer MAPI, based in part on its predecessor the MCMI, must be subjected to a similar validation process. Given the compelling evidence for the stability of adolescent psychopathology, the MAPI must be able to demonstrate the ability to distinguish symptoms from enduring personality difficulties in adolescents.

CHAPTER III

METHODOLOGY

A plan for the design and implementation of research procedures to investigate the research questions generated in Chapter I is presented here. The population of interest is defined; sampling techniques are described; and the measure used in the study, the Millon Adolescent Personality Inventory, is described, as well as relevant validation research set forth in the instrument manual. The design of the study and a list of testable hypotheses are delineated, and procedures for analytic treatment of the data are given.

Population

The sample under study for the treatment group was drawn from a population of male and female adolescent psychiatric inpatients between the ages of 14 and 17 years. These were patients who were consecutively admitted and treated at the Pine Rest Christian Hospital's Short Term Unit from December 1986 through June 1987, and whose parents gave their consent for their youngsters' participation in the study. During this period of time, six patients were not admitted to the study. In two cases parental consent was denied; in one case the adolescent patient refused participation; one patient

was underaged; one patient had a subnormal IQ; and one patient was discharged and the posttest MAPI was mistakenly omitted.

Historically, Pine Rest Christian Hospital was founded by individuals associated with the Christian Reformed Church. The environment of the hospital, while not considered in a formal manner in this study, may have had an important effect on the patients due to the particular values of the institution and staff. Of note, however, is that recent statistics have demonstrated that individuals from the Christian Reformed Church are not overrepresented among the Short Term Unit population.

Another possible limitation to generalization of findings is the fact that Pine Rest is a private hospital, and admission is not based solely on the clinical indication of the need for psychiatric hospitalization of an adolescent, as is often the case in public or state institutions. At the Pine Rest Short Term Unit, admission disposition or decision includes consideration of treatability within a short-term framework, which is ideally a 6-week course of treatment. These decisions are largely made at the discretion of the team psychiatrist and the psychotherapy staff of the Short Term Unit. The result is that many severely disturbed psychotic and severely substance- dependent adolescent patients do not gain admission to Pine Rest's Short Term Unit. These considerations dictate limitation in the extent to which findings from this study can be applied to other adolescent psychiatric inpatient populations.

The sample under study for the comparison groups was drawn from a population of male and female high school students between the ages

of 16 and 18 years. The Grand Rapids area high schools, selected because of their demographic and cultural similarity to the Pine Rest adolescent inpatient population sampled, were Catholic Central High School, West Catholic High School, and South Christian High School, all from the greater metropolitan area of Grand Rapids, Michigan.

Sample-Selection Criteria

The study sample consisted of three groups: adolescents admitted to and treated at the Pine Rest Christian Hospital Short Term Unit (n = 30, Group A), a comparison Group B of high school students selected for a response pattern on the first administration of the MAPI which is consistent with an abnormal pattern of responses or a base rate equal to or greater than 85 on at least two personality scales (n = 30), and a comparison Group C selected for a response pattern on the first administration of the MAPI which is consistent with the absence of psychopathology (n = 30). "Absence of psychopathology" was defined as no more than one personality scale elevated above a base rate score of 75 and below 80, with the remaining scales at 75 or below.

Procedures

Treatment subjects (Group A) in this study were recruited following their admission to the Short Term Unit at Pine Rest Christian Hospital. A brief explanation of the purpose of the study was provided by the unit staff, and those subjects whose parents provided their consent for participation in the study completed the

MAPI after 2 to 3 days of hospitalization. Patients who were first admitted to the Pine Rest Crisis Assessment Unit and later transferred to the Short Term Unit were administered the MAPI as a routine part of their evaluation in the Crisis Assessment Unit, and this then served as the first MAPI administration for these subjects. In all cases, after providing a brief description of the purpose of the study and obtaining parental consent, nursing and mental health worker staff provided the subject with the test form and instructions for completing the inventory. A trained research assistant who was also a unit staff member coded information on the test form regarding family constellation and mental health treatment history. Anonymity was maintained by identification of subjects only by their hospital number on the MAPI test form.

The second, or post-treatment MAPI, was completed 2 or 3 days before discharge. Subjects who were discharged precipitously by their parents or guardians before completion of treatment or against medical advice were excluded from this study ($\underline{n} = 0$). Subjects who remained at the hospital longer than the approximate 6-week interval had their repeat-measure MAPI no later than 8 weeks after admission ($\underline{n} = 1$). The purpose of this procedure was to insure a relatively uniform testing interval for all three groups.

A research assistant obtained data from the hospital chart and recorded this information (admission date, discharge date, birthdate, primary therapist, and admission diagnosis) on the Research Face Sheet. The assistant also obtained the completed Therapist's Rating Scale from individual therapists at the time of discharge of their

patient from the unit. All information-collecting devices, the MAPI, the Research Face Sheet, and the Therapist Rating Scale were identified by the subjects' hospital numbers only.

Control subjects for this study were recruited through the aforementioned high schools. In each case, permission was obtained from the school principal to conduct the study. Excluded were those subjects who were presently having, or had any type of mental health treatment in the past 12 months. A brief presentation of the purpose of the study was provided to potential subjects during the classes of psychology, social studies, and history. Interested participants were asked to obtain their parents' consent on the form provided. Students who provided this signed form were allowed to participate in the study. At the time of the first administration of the MAPI, the subjects were asked to code the following information on the test form: family constellation and mental health treatment history. Anonymity was maintained through a system of coding known only to the researcher for the purpose of identifying the subject for the repeated measure.

After a 6-week interval, all high school subjects, whether meeting the criteria for inclusion in Group B or C, and regardless of their mental health treatment history, were again administered the MAPI. However, those subjects meeting the inclusion criteria were assigned to the research groups on the basis of their first test scores as previously described. This procedure insured that no undue attention was unintentionally given to certain participants. These

procedures were repeated until the sample size of $n = 30$ for each group was obtained. In all cases, the MAPI data obtained were scored by the National Computer Systems Corporation.

A total of 146 high school students (Catholic Central $n = 68$, West Catholic $n = 40$, and South Christian $n = 38$) were tested. Of these, 21.2% met the criteria for inclusion in the abnormal control Group B, and 20.5% met the criteria for inclusion in the normal control Group C. An additional 13.9% had been in mental health treatment in the past year, and 23% of this group of 146 responded to the MAPI in a manner in which their test results were considered questionably unreliable or invalid.

The research proposal was subjected to various review processes. The Pine Rest Christian Hospital Research Committee reviewed the proposal to insure protection of patients' rights. The Michigan State University Committee on Research Involving Human Subjects reviewed a statement regarding the study's risk/benefit ratio, procedures for minimizing risk to the subject, and procedures for insuring confidentiality and informed consent (Appendix D). The National Computer Systems Corporation reviewed this research proposal and approved the application for a research discount for computer analysis of the MAPI test forms. Finally, the high schools involved approved the study before data were collected.

Description of the Sample

Descriptive data were gathered to describe the treatment group, including age, sex, grade, previous mental health treatment, father

in the home, mother in the home, admission diagnosis, length of treatment, and primary therapist's rating of treatment success (Appendices B and C). Treatment in this study was considered to be randomized in that there were six different therapists and a variety of different treatment modalities. This specialized adolescent treatment program consisted of individual, group, and family psychotherapy; an on-grounds school program; a variety of psychoeducational and recreational therapy activities; milieu management; medications where indicated; and periodic contacts with the team psychiatrist. Psychotherapy was seen as the cornerstone of treatment. The comparison groups were described in terms of age, sex, grade, mother in the home, father in the home, and previous mental health treatment in the past 12 months. (See Tables 3.1 through 3.8.)

Table 3.1: Age of Subjects (in years)

	Adolescent Inpatients Group A	Abnormal Control Group B	Normal Control Group C
Mean	15.53	16.56	16.90
Median	15.50	16.43	16.90
Standard deviation	1.07	0.67	0.71

Table 3.2: Sex of Subjects

Sex	Adolescent Inpatients Group A (%)	Abnormal Control Group B (%)	Normal Control Group C (%)
Male	50.0	40.0	20.0
Female	50.0	60.0	80.0

Table 3.3: Grade of Subjects

Grade	Adolescent Inpatients Group A (%)	Abnormal Control Group B (%)	Normal Control Group C (%)
8	3.3	0.0	0.0
9	30.0	0.0	0.0
10	36.7	0.0	0.0
11	13.3	73.3	56.7
12	16.7	26.7	43.3

Table 3.4: History of Previous Mental Health Treatment in the Past Year

Treatment	Adolescent Inpatients Group A (%)	Abnormal Control Group B (%)	Normal Control Group C (%)
Previous treatment	76.6	0.0	0.0
No previous treatment	23.3	100.0	100.0

Table 3.5: Father in the Home

Father	Adolescent Inpatients Group A (%)	Abnormal Control Group B (%)	Normal Control Group C (%)
Natural father	50.0	66.7	93.3
Adoptive father	3.3	10.0	3.3
Stepfather	26.7	13.3	0.0
Foster father	0.0	0.0	0.0
No father	20.0	10.0	3.3

Table 3.6: Mother in the Home

Mother	Adolescent Inpatients Group A (%)	Abnormal Control Group B (%)	Normal Control Group C (%)
Natural mother	83.3	90.0	93.3
Adoptive mother	6.7	10.0	3.3
Stepmother	3.3	0.0	3.3
Foster mother	0.0	0.0	0.0
No mother	6.7	0.0	0.0

Table 3.7: Admission Diagnosis for Adolescent Inpatients

Diagnosis	%
Major depression, single episode	3.3
Major depression, recurrent	3.3
Dysthymic disorder	30.0
Adjustment disorder with depressed mood	20.0
Adjustment disorder with disturbance of conduct	20.0
Adjustment disorder with mixed disturbance of emotions and conduct	13.3
Adjustment disorder with atypical features	3.3
Anorexia nervosa	3.3
Overanxious disorder of adolescence	3.3

Table 3.8: Length of Treatment for Adolescent Inpatients (in days)

Mean	51.53
Median	49.50
Standard deviation	11.91

Table 3.9: Length of Time Between First and Second MAPI (in days)

	Adolescent Inpatients Group A	Abnormal Control Group B	Normal Control Group C
Mean	46.23	42.30	42.27
Median	43.50	42.21	42.18
Standard deviation	9.49	0.47	0.45

The Millon Adolescent Personality Inventory

Description of Scales

The MAPI is a 150-item true-false type objective personality measure designed to measure personality dimensions, expressed concerns, and behavioral correlates in adolescents aged 13 to 18 years. This measure yields normative scores which are adjusted for prevalence data of personality traits on each of the 20 scales.

The eight personality-style variables are derived from Millon's (1969, 1981) theory of personality which categorizes personality styles according to a 4 x 2 matrix. According to the manual (Millon et al., 1982), the eight resulting personality styles are described as follows:

Scale 1: Introversive (31 items): Passive-detached: quiet, unemotional, and feel indifferent about their involvement with others;

Scale 2: Inhibited (41 items): Active-detached: withdrawn, mistrustful of others, lonely, and fearful of rejection;

Scale 3: Cooperative (35 items): Passive-dependent: seeks relationships in which others provide support; has little initiative or autonomy, and is clinging;

Scale 4: Sociable (29 items): Active-dependent: has strong needs for attention and approval, is dramatically emotional, superficial, capricious, and manipulating;

Scale 5: Confident (42 items): Passive-independent: has self-assurance and high self-esteem, is self-centered, exploitative, and takes others for granted;

Scale 6: Forceful (37 items): Active-independent: strives for power and control, is suspicious and hostile, and expresses anger;

Scale 7: Respectful (29 items): Passive-ambivalent: has a serious-minded, rule-conscious, subservient approach with underlying anger and oppositional feelings toward others, is fearful of disapproval;

Scale 8: Sensitive (46 items): Active-ambivalent: is pessimistic, emotionally labile, and alternating between explosive anger and contrition.

The next eight scales are not an integral part of Millon's theory. The eight areas of Expressed Concern are:

Scale A: Self Concept (36 items): the development of one's identity;

Scale B: Personal Esteem (36 items): self-acceptance, self-esteem, and positive valuation;

Scale C: Body Comfort (21 items): acceptance of physical appearance and body image;

Scale D: Sexual Acceptance (28 items): adjustment to sexual maturation and sexual impulses;

Scale E: Peer Security (23 items): concern with peer acceptance and resulting self-esteem;

Scale F: Social Tolerance (26 items): interpersonal sensitivity and respect for others;

Scale G: Family Rapport (25 items): family relationships and resolution of emancipation;

Scale H: Academic Confidence (30 items): attitudes toward academic achievement.

The four behavioral correlates that are assessed through empirically derived scales rather than self-report are Scale SS: Impulse Control (35 items), Scale TT: Societal Conformity (39 items), Scale UU: Scholastic Achievement (41 items), and Scale WW: Attendance Consistency (36 items). High scores on these scales indicate that the adolescent has responded to a group of items which correlates with individuals with poor impulse control, difficulty with conforming to rules and norms, poor academic achievement, or school truancy. These scales are not examined in this study.

Construction of the MAPI

The development of the MAPI was guided by a three-stage model of validation based on Loevinger's (1957) monograph. The first stage, theoretical substantive, involved the development of items which derived their content from Millon's theory of personality (1969, 1981). In this stage the MAPI was partially a replication of the MCMI, in which a similar set of items was developed for adults (Dyer, 1984). Beginning with over 1,000 items gathered from other psychological tests as well as abnormal and personality texts, items were deleted if they were too complicated for adolescents, had obvious desirability, were unclear, or had extreme frequency of endorsement. An item sort was performed by eight individuals, and

criteria for inclusion required that the item be correctly sorted by at least six.

The internal-structural validation stage involved specification of each scale's internal consistency, but not scale independence, since, according to Millon's theory, the scales should display selective overlap with other theoretically related scales. Therefore, substantial interscale correlations were demonstrated. Thus a factorial model of test construction was deliberately avoided. This nonfactorial approach to internal consistency, however, required that each item comprising a scale demonstrate its highest point-biserial correlation with this particular scale. Satisfactory endorsement frequency and stability over time were also inclusion criteria for items at this validation stage.

The third stage of validation, external-criterion, involved correlations of MAPI items with a variety of external criteria. In this stage, items that statistically differentiated the criterion group (adolescents rated by clinicians as having demonstrated specific troublesome behaviors) from the comparison group (no demonstration of the trait) were retained.

The MAPI was normed on groups of "clinical" and "nonclinical" subjects ranging in age from 13 to 19 years. The normal group (2,157 subjects) included 1,071 males and 1,086 females from high schools across the United States. Of the clinical group of 430 adolescents, 325 were outpatients and 105 were inpatients. The socioeconomic status of this standardization group approximated Hollingshead-Redlich estimated percentages in the general population (Dyer, 1984).

Scoring of the MAPI

In developing the scoring system for the MAPI, Millon et al. (1982) assumed that the transforming of raw scores into standard scores was inappropriate since these personality traits and concerns are neither normally distributed nor of equal prevalence in normal and clinical populations. Therefore, for the MAPI, raw scores are transformed into base rate scores. This conversion was determined by personality trait prevalence data obtained in external validation studies on 430 individuals. Clinicians were asked to rate their patients in line with written paragraphs describing each scale. Cutting lines were designed to maximize optimal valid-positive to false-positive ratios. Two arbitrary numbers were selected to designate the two base rate cutting lines. A base rate score of 75 was set for "presence" of personality or other features. Patients scoring above 74 are said to possess, in some clinically significant degree, the trait or concern assessed. Similarly, a base rate score of 85 was set for "prominence" of a personality or symptom syndrome. Patients scoring above 84 on a scale are said to be best characterized as displaying that trait or concern as the dominant element in their clinical picture. A base rate score of 50 was selected to represent the median for all adolescents who participated in the test-construction studies.

There are three items comprising the reliability index (Scale 21) which have been shown to be very successful in identifying those individuals for whom test-taking attitudes or lack of conviction

regarding their responses resulted in scores with little enduring meaning. On the machine-scored interpretive report, a score of 2 is recorded as unreliable, 0 equals reliable, and 1 is recorded as questionable reliability. A validity index (Scale 22) of three items has been shown to detect 75% of all subjects who fail to complete the MAPI carefully or relevantly. Again, scores of 2, 0, and 1 indicate invalid, valid, and questionable validity, respectively.

Empirical Evaluation of the MAPI

Empirical evaluation for the MAPI described in the manual included (a) reliability estimates for test-retest stability and internal consistency, (b) scale intercorrelations, (c) external correlations with other personality instruments, and (d) results of factor analyses.

Test-retest stability data employing the Kuder-Richardson Formula 20 reliability statistic on two clinical groups, 105 adolescents tested at 5-month intervals and 59 who were tested at a 1-year interval, revealed the following: Stability data over the 1-year period were in the .65 range, with expressed concern scale reliabilities lower than the personality scale correlations. For the 5-month clinical group, the coefficients were generally in the mid-70s range, with little difference between expressed concern scales and personality scales. These data seem to question Millon's theory regarding the theoretically greater stability of personality dimensions. While these reliability data in both cases were contaminated by treatment effects and changing adolescent

characteristics, they were considered by the test developers to be more than satisfactory. The median reliability coefficient for both groups was .74, with a range from .67 to .84. Dyer (1984) reported that these were in an acceptable range.

Scale intercorrelations were obtained using a mixed population of 569 adolescent females and 569 males. Scales which were theoretically expected to demonstrate overlap had higher correlations. Likewise, those expected to be theoretically incongruent had higher negative correlations.

The authors stated that correlations of one personality measure with another have less significance for validity than research employing real-world behavioral criteria since these measures often address different facets of similarly labeled concepts. Nevertheless, the manual presented extensive correlations between the MAPI scales and relevant scales of the California Psychological Inventory, 16PF, and the Edwards Personal Preference Schedule. In general, these correlations were in the moderate range and in the expected directions.

When factor analysis is employed in psychometric test construction and validation, it is intended to establish the validity of a test as a measure of some set of factorially pure constructs. The MAPI manual presented a factor-analytical study based on 569 males and 569 females from both high school and clinical settings. Since the manual repeatedly emphasized that the MAPI scales were correlated because of the item overlap and theoretical congruency, Dyer (1984) questioned the usefulness of this research since the statistical

method employed (varimax rotation) was designed to yield uncorrelated factors.

Nevertheless, the authors, without explanation of the rationale for this research, reported that this analysis produced four orthogonal factors accounting for greater than 75% of the variance. The first factor accounted for nearly one-half of the variance and appeared to measure an anxious fearfulness, dissatisfaction about self, and problems with peers. A second factor, accounting for approximately 25% of the variance, was defined by the Scholastic Achievement and Academic Confidence scales. Factor 3 was defined by the Forceful scale, measuring a tough vigilance as well as acting out, and Factor 4 was defined by the Introversive scale.

Therapist Rating Scale

A brief, global Likert-scale rating of treatment success was completed for each subject by the primary therapist (Appendix C). The purpose of this instrument was to provide descriptive data on the success of treatment for each subject in the inpatient group. Most patients in the Short Term Unit are admitted on the basis of treatability within a 6-week interval. However, on occasion a patient may be transferred to a long-term adolescent unit at Pine Rest, where the average length of stay is 4 to 6 months. Thus, it was judged useful to have a global rating of treatment success at the time of discharge from the Short Term Unit as descriptive data for the treatment group. (See Table 3.10.)

Table 3.10: Therapist Rating of Treatment Success

All Goals Were Met (%)	Many of the Goals Were Met (%)	Some of the Goals Were Met (%)	A Few of the Goals Were Met (%)	None of the Goals Were Met (%)
3.3	23.3	30.0	43.3	0.0

Design

The design for this study was a pre-experimental static-group comparison design in which a group which had experienced a treatment was compared with two groups which had not, for the purpose of establishing the effect of the treatment. However, caution has been exercised in unequivocally stating whether the changes observed in the MAPI scores were due to treatment effects. In the absence of randomization, which is the most adequate assurance of lack of initial biases between groups (Campbell & Stanley, 1963) matching on general demographic and cultural characteristics, was used as a method for achieving group equivalency between Group A and Group B.

Threats to internal validity in this design included selection factors, maturation, and regression toward the mean. Selection factors mean that, if the groups differ, it may well have come about through the differential recruitment of persons making up the groups, or the groups may have differed anyway without the occurrence of the treatment (Campbell & Stanley, 1963). The brief interval between testing, 6 weeks, mitigated against maturation as another threat to

internal validity in this design. Nevertheless, changes may have occurred in these groups by virtue of the changing developmental nature of the adolescent. The MAPI base rate scoring system assures equivalency based on age and sex of the groups, such that even though the groups differed on these variables, the base rate score has accounted for this initial bias. Another threat to internal validity, regression, is controlled as far as mean differences are concerned, no matter how extreme the group is on pretest scores, if both experimental and control groups are selected from the same extreme pool (Campbell & Stanley, 1963). The attempt at matching on degree of psychopathology in Groups A and B insures, to some extent, this equivalency. Despite the aforementioned threats to internal validity in this study, as well as the relative inferiority of the matching technique to randomization, the value of conducting such a study is defended by the need to expose the research hypotheses to a "chance of disconfirmation" (Campbell & Stanley, 1963, p. 64). Additionally, it should be noted that random assignment of patients presenting for treatment to the control or treatment group raises ethical issues of such magnitude that it virtually precludes the opportunity to employ a true experimental design.

Testable Hypotheses

Test-retest reliability:

> Hypothesis 1: For the treatment Group A, test-retest reliability coefficients for the Personality Scales 1 through 8 will be higher than those for the Expressed Concern Scales A through H.

Hypothesis 2a: For the untreated abnormal Group B and the normal Group C, test-retest reliability coefficients will be higher for the Personality Scales 1 through 8 than those for the treatment Group A.

Hypothesis 2b: For the untreated abnormal Group B and the normal Group C, test-retest reliability coefficients will be higher for the Expressed Concern Scales A through H than those for the treatment Group A, but lower than those for the Personality Scales 1 through 8 in these groups.

Differences between first testing and second testing:

Hypothesis 3a: For the treatment Group A, there will be significantly higher mean scores on admission testing for the Personality Scales 2 and 8 than on discharge testing.

Hypothesis 3b: For the treatment Group A, there will be significantly lower mean scores on admission testing for the Personality Scales 4 and 5 than on discharge testing.

Hypothesis 3c: For the treatment Group A, there will be significantly different mean scores between admission and discharge testing for the Personality Scales 1, 3, 6, and 7.

Hypothesis 3d: For the treatment Group A, there will be significantly higher mean scores on admission testing for the Expressed Concern Scales A through H than on discharge testing.

Hypothesis 4: For the untreated abnormal Group B, there will be no significant mean differences between the first testing and the second testing on the Personality Scales 1 through 8 and the Expressed Concerns Scales A through H.

Hypothesis 5: For the normal Group C, there will be no significant mean differences between the first testing and the second testing on the Personality Scales 1 through 8 and the Expressed Concerns Scales A through H.

Differences between groups:

Hypothesis 6: For the treatment Group A, there will be significantly higher scores on Personality Scales 2 and 8 on the first testing than the untreated abnormal Group B and the normal Group C.

Hypothesis 7: There will be no significant differences between groups on Personality Scales 2 and 8 on the second testing.

Analysis of the Data

For Hypotheses 1, 2a, and 2b, the Pearson product-moment correlation coefficient was computed on the first and second measures for each of the eight personality scales and each of the eight expressed concerns scales for each group. Comparisons of the coefficients were made between groups, as well as between personality and expressed concerns scales in the treatment group. This resulted in 48 correlation coefficients which were compared.

Hypotheses 3a, 3b, and 3d were analyzed by use of one-tailed *t*-tests for paired observations, and Hypotheses 3c, 4, and 5 were analyzed by use of two-tailed *t*-tests for paired observations to determine the significant mean differences between the first and second measures. The alpha level selected for determination of significance was .05. It is acknowledged that with a large series of *t*-tests there may be a chance finding of a significant mean difference, and this is considered in the analysis of the results.

Finally, to analyze between-group differences on Scales 2 and 8, an analysis of variance (ANOVA) procedure was conducted for both of these scales' mean base rate scores. The independent variable in each case was group membership, with three levels: Group A, B, and C. The dependent variable was the MAPI measurement, with two levels: the first and second measurement. To retain the alpha level or Type I error rate at an acceptable level, the ANOVA procedure is superior to a series of *t*-tests which would capitalize on a chance finding of a significant mean difference. Thus, in the case of a significant *F*-test, the Scheffe post-hoc comparison method determined which

pairwise between-group comparison yielded a significant difference on Scales 2 and 8. The Statistical Package for the Social Sciences (SPSS) (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975) was the computer program used for data analysis.

Secondary analyses were performed to determine whether the treatment Group A and the abnormal control Group B were truly equivalent in the degree of psychopathology. Frequency scores by scale and by group were computed, such that a scale-by-scale comparison could be determined between these two groups. A one-way ANOVA with group membership as the independent variable and the MAPI scale measurement on the pretest for the remaining scales as the dependent variable was also computed.

Summary

A sample of inpatient adolescents consecutively admitted to a psychiatric hospital was compared to two groups of high school students using the Millon Adolescent Personality Inventory. One of these comparison groups was defined as abnormal untreated on the basis of MAPI pretest scores, and one group was defined as normal. All subjects completed the MAPI on two occasions, separated by an average 6-week interval.

Hypotheses about test-retest reliability of each MAPI scale in each group were tested by means of Pearson product-moment correlation procedures. Expected differences between pre- and post-test scores for each group on each scale were tested by the paired-observations *t*-test. Finally, hypothesized between-group differences on Scales 2

and 8 of the MAPI were tested by univariate ANOVA procedures and the post-hoc comparison method recommended by Scheffe.

Secondary analyses to determine group equivalency on the pretest MAPI were performed, including a frequency analysis and one-way ANOVA on all pretest scores.

CHAPTER IV

ANALYSIS

In Chapter IV, the results of the hypotheses tests are presented. In the first section, the results of the correlation between the first and second testing for all three groups are presented. The results of the hypotheses tests for differences between the first and second measures are included in the second section. The third section contains the results for the hypotheses tests for differences among all three groups on Scales 2 and 8. Finally, results of the exploratory analyses are presented.

Results

The research plan provided for the use of 30 consecutively admitted adolescents in the inpatient Group A, 30 subjects in the abnormal untreated Group B, and 30 subjects in the normal control Group C. For the inpatient group, three subjects refused to participate in this study between the time period of December 1986 and June 1987. Additionally, two subjects were considered inappropriate because of age in one case and IQ in another case. One subject's discharge MAPI was mistakenly omitted. This degree of attrition is not considered to pose a threat to the data analysis or interpretation of results.

MAPI Scale Score Test-Retest
Reliability Hypotheses

Hypothesis 1: For the treatment Group A, test-retest reliability coefficients for the Personality Scales 1 through 8 will be higher than those for the Expressed Concern Scales A though H.

The first research hypothesis, stating that the personality scales will evidence higher test-retest reliability between the first and second testing than the expressed concern scales for the treatment group, was analyzed by a comparison of the magnitude of the correlation coefficients (Table 4.2.) Personality Scales 2, 4, 1, and 5 demonstrated the highest correlation coefficients. Expressed Concern Scales D, C, E, and A had higher correlations than Personality Scales 8, 3, 6, and 7. This research hypothesis was, therefore, only partially supported.

Table 4.1: MAPI Personality and Expressed Concern Scales and Codes

Code	Name	Code	Name
1	Introversive	A	Self Concept
2	Inhibited	B	Personal Esteem
3	Cooperative	C	Body Comfort
4	Sociable	D	Sexual Acceptance
5	Confident	E	Peer Security
6	Forceful	F	Social Tolerance
7	Respectful	G	Family Rapport
8	Sensitive	H	Academic Confidence

Table 4.2: Test-Retest Correlations for Treatment Group A Adolescent Inpatients (n = 30)

MAPI Scale	r	MAPI Scale	r
1	.74	A	.62
2	.76	B	.43
3	.55	C	.66
4	.75	D	.67
5	.69	E	.64
6	.55	F	.33
7	.39	G	.24
8	.57	H	.06

Hypothesis 2a: For the untreated abnormal Group B and the normal Group C, test-retest reliability coefficients will be higher for the Personality Scales 1 through 8 than those for the treatment Group A.

Hypothesis 2a, stating that personality scale test-retest correlation coefficients will be higher in both the untreated groups than in the treatment group, was analyzed by a comparison of the magnitude of the correlation coefficients (Table 4.3). For the untreated abnormal Group B, the correlation coefficients were uniformly higher for all personality scales than those of the treatment Group A. For the normal Group C, correlation coefficients were higher only for Scales 6, 7, and 8 than those of the treatment group. This hypothesis was, therefore, partially supported.

Hypothesis 2b: For the untreated abnormal Group B and the normal Group C, test-retest reliability coefficients will be higher for the Expressed Concern Scales A through H than those for the treatment Group A, but lower than those for the Personality Scales 1 through 8 in these groups.

Hypothesis 2b, stating that the expressed concern scales will evidence greater test-retest stability in the untreated groups, but

Table 4.3: Test-Retest Correlations for MAPI Personality Scales 1 Through 8 for Groups A, B, and C

MAPI Scale	Group A Adolescent Inpatients (n=30) r	Group B Untreated Abnormal (n=30) r	Group C Normal (n=30) r
1	.74	.79	.71
2	.76	.88	.56
3	.55	.80	.51
4	.75	.85	.52
5	.69	.88	.44
6	.55	.91	.58
7	.39	.94	.70
8	.57	.92	.61

yet still lower test-retest stability than the personality scales, was analyzed by a comparison of the magnitude of the correlation coefficients (Tables 4.3 and 4.4). The abnormal Group B had consistently higher correlation coefficients for all of the expressed concern scales except Scale D. Likewise, these expressed concern scale coefficients were in a similar or lower range than the personality scale coefficients within this abnormal group. However, Scales A, F, and G approached the degree of stability seen in the eight personality scales.

There were mixed results in the normal Group C on the expressed concern scale coefficients. Coefficients for Scales B, E, F, G, and H were higher than those for the treatment group, but coefficients for Scales A, C, and D were lower than those for the treatment group. Within the normal group, in general, the personality scales were more

stable with the exception of Scale 5. Also, Expressed Concern Scales E, B, and A approached the degree of stability seen in the personality scales. This hypothesis, therefore, was partially supported by the results.

Table 4.4: Test-Retest Correlations for MAPI Expressed Concern Scales A Through H for Groups A, B, and C

MAPI Scale	Group A Adolescent Inpatients (n=30) r	Group B Untreated Abnormal (n=30) r	Group C Normal (n=30) r
A	.62	.86	.57
B	.43	.76	.69
C	.66	.76	.44
D	.67	.60	.46
E	.64	.63	.71
F	.33	.83	.42
G	.24	.92	.49
H	.06	.77	.28

MAPI Scale Score Differences Between First and Second Measures

Hypothesis 3a: For the treatment Group A, there will be significantly higher mean scores on admission testing for the Personality Scales 2 and 8 than on discharge testing.

Hypothesis 3a, stating that MAPI Personality Scales 2 and 8 will be higher upon admission to an inpatient adolescent unit, was tested by a one-tailed paired observation t-test. The Scale 2 mean value was significantly higher on the admission MAPI for the treatment Group A ($t = 6.11$, $p < .000$). The Scale 8 mean value was significantly higher

on the admission MAPI for the treatment Group A (t = 4.94, p < .000) (Table 4.5). This hypothesis was, therefore, supported.

Table 4.5: Paired-Observations t-Test Results for MAPI Personality Scales 2 and 8 for Adolescent Inpatients (n = 30)

MAPI Scale	Mean	Standard Deviation	t	p
2	69.56/46.50	30.99/27.69	6.11	.000
8	79.70/59.43	23.87/24.79	4.94	.000

Hypothesis 3b: For the treatment Group A, there will be significantly lower mean scores on admission testing for the Personality Scales 4 and 5 than on discharge testing.

Hypothesis 3b, stating that MAPI Personality Scales 4 and 5 will be lower upon admission to an inpatient psychiatric adolescent unit, was tested by a one-tailed paired-observations t-test. The Scale 4 mean value was significantly lower on the admission MAPI for the treatment Group A (t = -3.66, p < .000). The Scale 5 mean value was significantly lower on the admission MAPI for the treatment Group A (t = -4.12, p < .000) (Table 4.6). This hypothesis was, therefore, supported.

Table 4.6: Paired-Observations t-Test Results for MAPI Personality Scales 4 and 5 for Adolescent Inpatients (n = 30)

MAPI Scale	Mean	Standard Deviation	t	p
4	51.63/65.33	29.02/28.72	-3.66	.000
5	40.86/56.23	27.15/24.66	-4.12	.000

Hypothesis 3c: For the treatment Group A, there will be significantly different mean scores between admission and discharge testing for the Personality Scales 1, 3, 6, and 7.

Hypothesis 3c, stating that MAPI Personality Scales 1, 3, 6, and 7 will be different following treatment, was tested by a two-tailed paired-observations *t*-test. The difference between the mean values for Scale 1 was not significant ($t = -0.11$, $p < .916$). The difference between the mean values for Scale 3 was not significant ($t = 0.51$, $p < .616$). The difference between the mean values for Scale 6 was not significant ($t = 0.06$, $p < .951$). The difference between the mean values for Scale 7 was significant ($t = -2.13$, $p < .042$) (Table 4.7). The hypothesis was, therefore, not supported for Scales 1, 3, and 6 and was supported for Scale 7.

Table 4.7: Paired-Observations *t*-Test Results for MAPI Personality Scales 1, 3, 6, and 7 for Adolescent Inpatients ($n = 30$).

MAPI Scale	Mean	Standard Deviation	*t*	*p*
1	36.70/37.03	19.97/25.44	-0.11	.916
3	51.40/48.86	28.80/28.79	0.51	.616
6	53.76/53.46	29.04/26.62	0.06	.951
7	34.83/43.16	21.38/22.14	-2.13	.042

Hypothesis 3d: For the treatment Group A, there will be significantly higher mean scores on admission testing for the Expressed Concern Scales A through H than on discharge testing.

Hypothesis 3d, stating that MAPI expressed concern scales should decrease following treatment, was tested by one-tailed

paired-observations *t*-tests (Table 4.8). The hypothesis was supported for all scales except Scales C and D.

Table 4.8: Paired-Observations *t*-Test Results for MAPI Expressed Concern Scales A Through H for the Adolescent Inpatient Treatment Group A (*n* = 30)

MAPI Scale	Mean	Standard Deviation	*t*	*p*
A	71.96/49.50	27.51/22.21	5.54	.000
B	72.70/60.56	23.70/23.04	2.66	.006
C	61.56/57.30	25.73/27.02	1.07	.147
D	61.06/55.16	22.64/27.45	1.55	.066
E	64.66/51.10	24.92/21.17	3.73	.000
F	54.50/46.10	23.00/24.08	1.69	.050
G	83.46/66.80	23.76/25.32	3.02	.002
H	75.76/57.03	19.57/22.53	3.55	.001

Hypothesis 4: For the untreated abnormal Group B, there will be no significant mean differences between the first testing and the second testing on the Personality Scales 1 through 8 and the Expressed Concerns Scales A through H.

Hypothesis 4, stating that the MAPI personality scales and expressed concern scales should not change in the untreated abnormal group, was tested by a two-tailed paired-observations *t*-test to determine the significant mean differences between the first and second measures (Table 4.9). This hypothesis was supported for MAPI Scales 1, 3, 6, 7, A, B, C, D, E, F, G, and H.

Table 4.9: Paired-Observations *t*-Test Results for MAPI Personality Scales 1 Through 8 and Expressed Concern Scales A Through H for the Untreated Abnormal High School Adolescent Group B (*n* = 30)

MAPI Scale	Mean	Standard Deviation	*t*	*p*
1	32.33/37.00	20.94/22.60	-1.83	.077
2	40.00/34.63	29.44/24.63	2.15	.040
3	50.70/49.46	34.06/29.24	0.33	.742
4	66.63/74.90	28.22/26.44	-2.99	.006
5	63.80/70.20	27.84/26.22	-2.62	.014
6	52.26/51.36	32.68/31.03	0.36	.718
7	56.90/60.30	32.48/31.76	-1.63	.114
8	51.93/46.36	32.52/32.16	2.36	.025
A	44.46/40.06	27.90/24.37	1.67	.106
B	56.30/53.06	25.64/25.86	0.99	.331
C	53.03/47.03	21.10/28.01	1.82	.078
D	46.86/44.23	17.44/20.32	0.84	.405
E	46.13/41.80	25.05/18.67	1.20	.239
F	40.36/41.33	26.12/27.19	-0.34	.735
G	53.26/52.36	38.71/35.48	0.33	.745
H	46.70/45.83	25.91/27.40	0.26	.794

Hypothesis 5: For the normal Group C, there will be no significant mean differences between the first testing and the second testing on the Personality Scales 1 through 8 and the Expressed Concerns Scales A through H.

Hypothesis 5, stating that the MAPI personality scales and expressed concern scales should not change in the normal group, was tested by a two-tailed paired-observations *t*-test (Table 4.10). This hypothesis was supported for all the MAPI scales.

Table 4.10: Paired-Observations *t*-Test Results for MAPI Personality Scales 1 through 8 and Expressed Concern Scales A Through H for the Normal High School Adolescent Group C (*n* = 30)

MAPI Scale	Mean	Standard Deviation	*t*	*p*
1	35.53/34.60	18.22/17.45	0.38	.708
2	42.86/43.40	12.84/17.52	-0.20	.845
3	46.26/46.06	17.95/22.07	0.05	.957
4	57.96/63.60	15.50/19.33	-1.77	.088
5	53.26/55.63	11.99/14.28	-0.92	.365
6	51.70/53.20	15.25/19.65	-0.50	.622
7	48.96/51.83	16.54/20.45	-1.07	.295
8	51.36/51.06	15.07/17.96	0.11	.912
A	50.20/51.00	11.06/14.54	-0.36	.723
B	60.36/59.66	17.24/19.24	0.27	.790
C	57.46/53.60	21.54/24.33	0.86	.394
D	49.26/46.53	14.87/19.06	0.83	.411
E	55.23/53.36	14.70/20.03	0.73	.472
F	40.70/41.63	20.33/21.16	-0.23	.821
G	56.03/59.70	18.62/21.76	-0.98	.336
H	51.90/53.13	13.52/16.81	-0.37	.717

MAPI Scale Score Between-Group Differences Hypotheses

Hypothesis 6: For the treatment Group A, there will be significantly higher scores on Personality Scales 2 and 8 on the first testing than the untreated abnormal Group B and the normal Group C.

Hypothesis 6, stating that the group in treatment will score higher on Scales 2 and 8 at the time of the first testing, was tested by a one-way ANOVA for each scale. The difference between the mean values for Scale 2 was found to be significant ($F = 12.009$, $p < .000$). The hypothesis was therefore supported by the results (Table 4.11). The results of the post-hoc comparison method recommended by Scheffe revealed that the treatment Group A was significantly different from

Groups B and C on Scale 2 (Table 4.12). The difference between the mean values for Scale 8 was found to be significant ($F = 12.73$, $p < .000$). The hypothesis was therefore supported by the results (Table 4.13). Scheffe's post-hoc comparison method revealed that the treatment Group A mean was significantly different from Groups B and C and thus accounted for the significant effect (Table 4.14).

Table 4.11: ANOVA of Mean MAPI Scale 2 Pretest (Inhibited Scale)

Source of Variation	Sum of Squares	df	Mean Squares	F	Signif. of F
Between	15952.9880	2	7976.494	12.009	.000
Within	57786.7637	87	664.215		
Total	73739.7500	89			

Table 4.12: Results of Post-Hoc Comparisons by the Scheffe Method for MAPI Scale 2

Subset 1		
Group	Group B (Abnormal Untreated)	Group C (Normal)
Mean	40.00	42.86
Subset 2		
Group	Group A (Treatment)	
Mean	69.56	

Table 4.13: ANOVA of Mean MAPI Scale 8 Pretest (Sensitive Scale)

Source of Variation	Sum of Squares	df	Mean Squares	F	Signif. of F
Between	15740.866	2	7870.432	12.730	.000
Within	53780.065	87	618.265		
Total	69529.921	89			

Table 4.14: Results of Post-Hoc Comparisons by the Scheffe Method for MAPI Scale 8

Subset 1		
Group	Group C (Normal)	Group B (Abnormal Untreated)
Mean	51.36	51.93
Subset 2		
Group	Group A (Treatment)	
Mean	79.70	

Hypothesis 7: There will be no significant differences between groups on Personality Scales 2 and 8 on the second testing.

Hypothesis 7, which states that the three groups will not differ on the posttest measurement on MAPI Scales 2 and 8, was analyzed by a one-way ANOVA for each scale. The difference between the mean values for Scale 2 was not found to be significant ($F = 2.028$, $p < .137$). Therefore, these groups did not differ on the MAPI posttest, and the hypothesis was supported for Scale 2 (Table 4.15). The difference between the mean values for Scale 8 was not found to be significant ($F = 1.999$, $p < .141$). Once again, the three groups did not differ on

Scale 8 on the MAPI posttest measure, and the hypothesis was therefore supported (Table 4.16).

Table 4.15: ANOVA of Mean MAPI Scale 2 Posttest (Inhibited Scale)

Source of Variation	Sum of Squares	df	Mean Squares	F	Signif. of F
Between	2272.832	2	1136.416	2.028	.137
Within	48741.595	87	560.248		
Total	51014.421	89			

Table 4.16: ANOVA of Mean MAPI Scale 8 Posttest (Sensitive Scale)

Source of Variation	Sum of Squares	df	Mean Squares	F	Signif. of F
Between	2628.297	2	1314.148	1.999	.141
Within	47164.123	87	657.403		
Total	49822.414	89			

Exploratory Analyses of Group Frequency Scores on MAPI Scales 1 Through 8 and A Through H

In the interest of exploration, to determine whether Group A (the treatment group) and Group B (the abnormal untreated group) were equivalent on the pretest MAPI (or whether they were matched on the degree of psychopathology), a frequency analysis was performed. The results of this analysis demonstrate that there were more high Scales 4 and 5 in the abnormal untreated group and more high Scales 2 and 8 in the treatment group. (See Appendices E and F.)

Exploratory Analyses of Between-Group Differences in Pretest Scores on MAPI Personality Scales 1, 3, 4, 5, 6, and 7

Each of the remaining personality scales of the MAPI (Scales 1, 3, 4, 5, 6, and 7) pretest for each group were analyzed in the same manner as described for Hypotheses 6 and 7 in the interest of exploration. (See Appendices G through L.) The abnormal untreated group had significantly higher mean scores on Scale 5 (Confident) and on Scale 7 (Respectful) than the treatment or normal groups. The groups did not differ significantly on the pretest on Scales 1, 3, 4, and 6.

Summary

Eleven research hypotheses were investigated in this study. The first three hypotheses concerned the test-retest stability of MAPI scores on Personality Scales 1 through 8 and Expressed Concern Scales A through H. Comparing the treatment group with the two untreated groups, in general, the personality scales evidenced a greater degree of stability in all three groups than the expressed concern scales. The notable exception was seen in the treatment group, where only Personality Scales 2, 4, 1, and 5 had the highest degree of stability. The abnormal untreated group obtained the highest correlation coefficients for all the scales.

The second group of hypotheses consisted of expected differences between the first and second MAPI measurement in the treatment, abnormal untreated, and normal groups. The treatment group had significantly higher scores on Scales 2 and 8 at admission and significantly lower scores on Scales 4 and 5 at admission. Significant differences

between admission and discharge testing for this group were not detected for Personality Scales 1, 3, and 6. However, Personality Scale 7 did change significantly in a higher direction at discharge. Significantly higher scores for the expressed concern scales were observed on admission in the treatment group, except in the case of Scales C and D.

The untreated abnormal group demonstrated no significant pre-posttest change, except on Personality Scales 2, 4, 5, and 8. As hypothesized, the normal group evidenced no significant pre-posttest change on any MAPI scale.

The third set of hypotheses concerned an analysis of between-group differences on Scales 2 and 8. As hypothesized, the treatment group had significantly higher pretest scores on Scales 2 and 8 on admission, and this difference was not observed in the posttest scores as was predicted.

In the interest of exploration, it was found that the abnormal untreated group comprised significantly greater high Scale 5 and 7 scores (Confident and Respectful).

CHAPTER V

SUMMARY AND CONCLUSIONS

This chapter includes an overall review of the study. Subsequent sections are focused on conclusions and interpretations derived from the results of the hypotheses tests and from an exploratory analysis of the data. Implications for theory development and future research are given.

Summary of the Study

A static-group comparison study was conducted, in which 30 consecutively admitted adolescent psychiatric inpatients were compared to two groups of 30 high school students on the basis of their scores on the Millon Adolescent Personality Inventory (MAPI). The comparison groups were selected on the basis of their MAPI pretest scores, one group having scored in an abnormal range and one group having scored in a normal range. Hypotheses were advanced based on a theoretical integration of Millon's theory of personality (1969, 1981), theory and research regarding adolescent psychopathology, and recent research findings using the adult version of Millon's personality measurement device, the Millon Clinical Multiaxial Inventory, as well as current research involving the MAPI. Millon's theory of personality holds that personality is an enduring manner of thinking, feeling, and

behaving which gives form and substance to the clinical symptomatic presentation of an individual. Since this ever-present style is rooted in early biosocial learning opportunities, it has the characteristics of both stability and consistency across situations.

Research of the past decade was reviewed which has clearly and unequivocally challenged the psychoanalytic position of adolescent psychopathology as being transient in nature and an outcome of developmental crisis. On the contrary, mounting empirical evidence has supported Weiner's (1980, 1982) argument, which defines psychopathology in adolescence as enduring, identifiable, and worthy of diagnosis and treatment. From this body of literature, along with the expanding empirical findings validating Millon's theory of personality as measured by the MCMI, indications for the study of the newer adolescent personality inventory were clear. To be an effective clinical and theoretically sound measurement of adolescent personality, the MAPI must be able to distinguish personality from symptoms; personality scales should remain more stable, even with the intervening variable of treatment; symptomatic concerns should respond to treatment; and with treatment, debilitating aspects of personality should diminish while more adaptive styles emerge. Thus an investigation of the MAPI as a treatment outcome measure was deemed a theoretically and clinically valuable endeavor.

In this study a comparison of test-retest stability, differences between the first and second MAPI measurement for each group, and between-group differences on MAPI Scales 2 and 8 were examined. The sensitivity of the Inhibited Personality Scale 2 and the Sensitive

Personality Scale 8 to the crisis of hospitalization had been clinically observed as well as documented in previous unpublished research (Pantle & Houskamp, 1986; Pantle & Wassink, 1986).

The predicted greater stability of the personality scales on test-retest correlation was found to be greatest for the untreated abnormal group. Somewhat lesser stability was observed in the treatment group given the intervening variable of treatment, and the least degree of reliability was observed in the normal group. As expected, the stability of the symptom scales was generally lower than that of the personality scales, with the exception being the normal group.

The analysis of differences between the first and second MAPI measurements yielded the hypothesized trends. Specifically, for the treatment group, Scale 2 (Inhibited) and Scale 8 (Sensitive) decreased significantly with the discharge MAPI measurement, while Scale 4 (Sociable) and Scale 5 (Confident) significantly increased. These findings are also highly robust, considering the number of *t*-tests performed. Scale 7 (Respectful) increased with treatment, while, contrary to prediction, no significant change was observed for Scale 1 (Introversive), Scale 3 (Cooperative), and Scale 6 (Forceful). The predicted higher admission scores in the treatment group on MAPI Expressed Concern Scales A, B, E, F, H, and H occurred (Self-Concept, Personal Esteem, Peer Security, Social Tolerance, Family Rapport, and Academic Confidence scales, respectively, while Scale C (Body Comfort) and Scale D (Sexual Acceptance) did not change significantly with

treatment, although the trend was toward a decrease following hospitalization.

The hypothesis regarding no pre-posttest change in the abnormal untreated group for all MAPI scales was supported for all scales except Scale 2 (Inhibited), Scale 4 (Sociable), Scale 5 (Confident), and Scale 8 (Sensitive). Scale 2 and Scale 8 decreased significantly ($p < .04$ and $p < .025$), but these findings are not considered robust given the number of t-tests performed. The increases with the second MAPI on Scales 4 and 5 were significant ($p < .006$ and $p < .014$) but, once again, not robust given the number of t-tests performed. Finally, as predicted in the normal group, no significant pre-posttest differences were observed for any of the MAPI scales.

Two hypotheses were formulated to test the proposition that Scale 2 (Inhibited) and Scale 8 (Sensitive) are sensitive to the crisis of hospitalization; thus these scales may demonstrate an artificial elevation at the time of hospital admission secondary to the degree of mistrust of others and emotional lability that these scales measure. The analysis of variance for the pretest scores was significant and robust, with the treatment group accounting for the difference, while, as predicted, the analysis of variance on the posttest scores was not significant.

Finally, an exploratory analysis revealed that the abnormal untreated group comprised significantly higher score means for the pretest on Scales 5 and 7 (Confident and Respectful).

Conclusions Regarding Demographic and Clinical Variables

Differences were observed in the three groups with respect to age, sex, and grade in school. The treatment group represented a wider range of age and grade in school, while the comparison groups were not only on the average 1 year older, but were clustered in grades 11 and 12. Also, the normal group was 80% female. The MAPI base rate scoring distribution adjusts for age and sex, and thus these results are not considered to pose a threat to the data analysis or interpretation of the results.

Contrary to the research findings described in the epidemiological study by Kashani et al. (1987), the subjects in the treatment group in the present study were more likely to come from broken homes. Fifty percent of these subjects' homes had an adoptive father, stepfather, or no father living in the home at the time of hospitalization. In contrast, the normal group was characterized by the least degree of disruption of the nuclear family. Kashani et al. did not find a significant correlation between having lived in a broken home and psychiatric disorder in adolescence. However in Kashani et al.'s work, adolescents were classified as having a psychiatric disorder if they met DSM-III diagnostic criteria as well as rated "in need of treatment." This group was not, however, an inpatient population. It is possible that when considering an inpatient population, a greater number of adolescents in hospital treatment may well have experienced a broken home. It is also possible that the particular inpatient

population researched in this study differed in this respect from a more general (nonprivate) inpatient population.

It is also notable that of the 146 high school students tested in this study in an attempt to find subjects meeting the criteria for the abnormal untreated group and the normal group, 21.2% were classified as scoring above a BR score of 85 on two personality scales and were judged for the purpose of this study to be "abnormal." This percentage of abnormality approaches the prevalence rate of psychiatric disorder in adolescents as found by Kashani et al. (1987) in their more comprehensive study of psychiatric disorder in a community sample of adolescents. While the use of the MAPI as a sole criterion for abnormality would not be adequate in an epidemiological study of psychiatric-disorder prevalence, it is nevertheless interesting that these percentages were similar in both the present study and Kashani et al.'s work.

The most frequently occurring DSM III diagnostic classifications for adolescents in the present study were depression and disturbance of conduct. This finding appears to echo the work of Kashani et al. (1987), who found that depression, conduct disorder, and anxiety disorder were the most commonly occurring diagnostic categories.

Conclusions Regarding Stated Hypotheses on Test-Retest Stability of MAPI Scale Scores

The first three hypotheses that were developed in the second and third chapters of this study concerned the degree of stability that would be observed in the MAPI personality scales versus the MAPI expressed concern scales. Piersma's (1986) study and McMahon, Flynn,

and Davidson's (1985a, 1985b) work had described the relative stability of the MCMI's personality scales from which the MAPI was, in part, derived. Research was also reviewed pointing to the enduring nature of psychopathology diagnosed in adolescence, as well as the stability of personality traits at this age. The hypotheses thus advanced predicted that test-retest correlations should be greater for the personality scales of the MAPI than the expressed concern scales, and that the untreated groups should demonstrate even greater stability in the absence of the intervening variable of treatment.

Thus, according to Millon's theory as well as research on adolescent psychopathology, if personality psychopathology exists in adolescence, it should be stable but respond to a degree to treatment. Consistent with theory, the abnormal untreated group demonstrated the highest degree of test-retest stability. Coefficients for reliability ranged from $\underline{r}$ = .79 to .94 for the MAPI personality scales. Five of the expressed concern scales represented the lower range of stability, $\underline{r}$ = .60 to .77. Two of the expressed concern scales, Scale G (Family Rapport) and Scale A (Self-Concept) were among the most stable of the symptom scales, approaching the degree of stability seen in the personality scales. This would make clinical sense since a more disturbed adolescent population may well demonstrate, over time, a stable degree of disturbance of identity as well as the resulting family conflict. Scale A also overlaps significantly with personality Scale 8 and Scale G with personality Scales 7 and 8, and thus may have tended to covary with the personality scales. Indeed, Kashani et al. (1987)

found in the well-designed epidemiological study of psychiatric-disorder prevalence in a community sample of adolescents, that self-concept was significantly lower and reports of parents being less caring were significantly greater in the adolescents with psychiatric disorder. Likewise, Offer and Offer's Normal Adolescent Project (1975) found that a significant and sizable group of adolescent males (20%) suffered from personality difficulties which were striking and enduring.

Turning now to examine the coefficients of stability found in the treatment group in the present study, Personality Scale 2 (Inhibited, $\underline{r}$ = .76), Scale 4 (Sociable, $\underline{r}$ = .75), Scale 1 (Introversive, $\underline{r}$ = .74), and Scale 5 (Confident, $\underline{r}$ = .69) were among the most stable given the intervening variable of treatment. Thus, such personality characteristics as mistrust of others and fear of rejection, interpersonal isolation, the active need for attention and approval, and interpersonal self-assurance and exploitiveness were among the most unchanging traits, despite treatment, in this sample of adolescents. Since Scales 4 and 5 represent some degree of health as seen in earlier studies of the MAPI and MCMI (Pantle & Houskamp, 1986; Pantle & Wassink, 1986; Piersma, 1986a, 1986b), it would be consistent that successful treatment should underscore rather than change aspects of these adaptive personality characteristics measured by these scales. Likewise, the detached personalities, the Inhibited and Introversive, are perhaps the most refractory to change. Perhaps much longer treatment than 6 weeks would be necessary to influence the basic style of detachment.

On the other hand, Scale 8 (Sensitive, r = .57), Scale 3 (Cooperative, r = .55), Scale 6 (Forceful, r = .55), and Scale 7 (Respectful, r = .39) had stability coefficients considerably lower than the earlier described Scales 2, 4, 1, and 5 and lower than four of the expressed concern scales. These MAPI scales purportedly measure emotional lability; dependency; interpersonal hostility, anger, and striving for control and power; and interpersonal subservience and fear of disapproval. Since the sample was predominantly depressed or suffering from conduct disturbance, it would make clinical sense that the personality characteristics measured by these scales would be the targets of treatment. Thus, in a depressed group of adolescents, attention would be directed at increasing independence and decreasing anger and fear of disapproval. Adolescents with conduct disturbance would most likely address their interpersonal hostility, lability, and impulsivity in treatment.

Likewise, in the treatment group, Scale F (Social Tolerance, .r = 33), Scale G (Family Rapport, r = .24), and Scale H (Academic Confidence, r = .06) were the least stable symptom scales. This treatment group, therefore, changed the most in their relationships with others, their family relationships, and their academic work. Scale B (Personal Esteem, r = .43) was also relatively unstable. Thus it would appear that individual therapy goals directed at increasing self-esteem, family therapy, group (social) therapy, and the school program had the greatest possible treatment effect, resulting in a decrease in felt concerns in these four areas.

A mid-range of stability was observed in four of the expressed concern scales, Scale D (Sexual Acceptance, $\underline{r}$ = .67), Scale C (Body Comfort, $\underline{r}$ = .66), Scale E (Peer Security, $\underline{r}$ = .64), and Scale A (Self-Concept, $\underline{r}$ = .62). Thus treatment may have had a moderate degree of effect on decreasing concerns in these areas. It should also be noted that certain MAPI scales have a high degree of item overlap, and thus are intercorrelated. This is true for Scales C and D, as well as for Scales G and H. Thus these scales would tend to covary.

Results of the stability coefficients for the normal group were the most mixed. Personality scales predominated, however, among the higher stability coefficients in this group. This group represented a far more compact distribution. Thus the overall lower level of reliability, or lower correlation coefficients, of the scales in this group may be explained because of the fact that even the slightest variation of one item would have had a greater effect on $\underline{r}$, given the tighter distribution. It is also possible that a larger sample size would be needed to demonstrate higher test-retest reliability in this group. This group was also quite homogeneous with respect to sex, being 80% female. Scale E (Peer Security), Scale B (Personal Esteem), and Scale A (Self-Concept) were the most stable expressed concern scales. This can be explained most parsimoniously by the fact that a group of normal adolescents would possess the most positive and stable identity, and thus greater self-esteem and comfort with friends. The lowest coefficient of stability was observed on Scale H (Academic Confidence, $\underline{r}$ = .28). It is possible that this MAPI scale fails to

measure what it purports to measure. However, Millon et al. (1982) reported a test-retest reliability coefficient of .78 for 5 months and .53 for 1 year in a clinical population. Perhaps another explanation is more plausible. The spurious effect of exam time needs to be considered since data-collection times frequently coincided with upcoming exam times. Finally, the lower overall level of test-retest reliability in the normal group raises questions about the suitability of the MAPI for normal populations. This question Millon answered by recommending the MAPI for clinical or guidance populations.

Conclusions Regarding Stated Hypotheses on Differences Between First and Second MAPI Measurements

A second set of six hypotheses concerning significant change between the first and second testing was developed in Chapters II and III of the present study. Previous unpublished research and clinical experience with the MAPI (Green, personal communication, 1986) suggested that the MAPI Scale 2 (Inhibited scale, measuring social withdrawal, mistrust of others, and fear of rejection) and Scale 8 (Sensitive scale, measuring emotional lability and conflict with others) would significantly decrease with treatment. The predicted trend was supported by a highly robust level of significance, $p < .000$, in the treatment group. This finding echoes the work of Pantle and Wassink (1986), who found that a suicide attempter group had higher Scales 2 and 8 upon admission to a crisis hospital unit. Millon considered these two scales as theoretically congruent, and thus interpersonal mistrustfulness and depressive emotionality

characterize both personalities. A decrease in Scales 2 and 8 was also observed in the abnormal untreated group but was not considered to be of sufficient magnitude to be robust given the number of *t*-tests performed. Significance would need to approach the $p < .003$ level to be robust for the series of 16 *t*-tests performed for the abnormal untreated group. No significant change for Scales 2 and 8 was observed in the normal group. A suggested explanation for the observed change in Scales 2 and 8 for the abnormal untreated group would be that the first MAPI testing for this more disturbed group represented a "mini-crisis" which resolved itself on the second testing. Perhaps the cry for help was not heeded or imagined unpleasant posttest sequelae did not materialize, and the degree of crisis spontaneously remitted. This may also represent a regression effect, but it certainly does not parallel the magnitude of change seen in the treatment group.

It is evident from recent research involving the MCMI (McMahon et al., 1985; Piersma, 1986a, 1986b) that upon psychiatric hospital discharge, certain personality characteristics such as feeling more confident and outgoing would be positive treatment outcomes. Thus it was predicted and supported that Scale 4 (Sociable) and Scale 5 (Confident) would increase subsequent to successful inpatient treatment. The results for this study were not only significant, but robust given the number of *t*-tests performed ($p < .000$ and $p < .000$). In a sample drawn from the same hospital, Pine Rest Christian, but from the adolescent Crisis Assessment Unit, Pantle and Wassink (1986) discovered that suicide attempters had significantly lower scores on

Scales 4 and 5 on admission. Likewise, from the same population, Pantle and Houskamp (1986) found that Scales 4 and 5 declined significantly on admission in a severely abused group of adolescents. A similar pre-posttest change was not observed in the normal group. However, a statistically significant increase in Scales 4 and 5 was observed in the abnormal untreated group. Once again, this difference was not considered robust given the number of *t*-tests performed ($p < .006$ and $p < .014$) rather than the necessary $p < .003$ for 16 *t*-tests. Nevertheless, some explanation is warranted.

A secondary frequency analysis of all MAPI pretest scores was conducted as well as one-way analysis of variance on all the remaining MAPI pretest personality scales (Scales 1, 3, 4, 5, 6, and 7). (See Appendices E through L.) The frequency analysis demonstrates that more high 2-point Scale 4-5 scores were admitted to the abnormal group. Thus the abnormal group consisted of more high 4-5's, and their customary defenses increased with the second testing. Thus they were more likely to deny any personal shortcomings and to be increasingly guarded and defensive, which are unconscious mechanisms underlying these two scales. The one-way analysis of variance on Scale 5 with group membership as the independent variable revealed a significant difference ($F = 7.160$, $p < .001$). The post-hoc comparison method recommended by Scheffe revealed that the abnormal group differed significantly from the treatment and normal groups on Scale 5 on the pretest. Millon's personality theory would suggest that although high Scale 5 scores would indicate a greater degree of confidence and

unusually high functioning, at even higher levels this pattern would correspond increasingly to a narcissistic personality disorder. The narcissistic personality can be notably well functioning and successful (Millon, 1981) and thus able to avoid hospitalization, except when external circumstances may severely shake the individual's air of imperturbability and self-confidence. Thus, a degree of sampling bias may account for changes observed in Scale 5 in the abnormal untreated group and also for the changes observed in the highly intercorrelated Scale 4.

It was hypothesized that Scales 1, 3, 6, and 7 would change following treatment, but direction of change was not predicted. Only Scale 7 (Respectful) changed significantly in a higher direction. Thus, similar to Piersma's (1986) findings, an increase in feeling in control of one's life may be an expected healthy outcome of treatment. It was observed that the means for Scales 1 and 6 were similar across groups, but slightly higher in the treatment group. An analysis of the raw data indicated that 12 subjects in the treatment group demonstrated no pre-posttest change on Scale 1, and eight subjects demonstrated no pre-posttest change on Scale 6. Other subjects increased or decreased in their scores. Thus, treatment of a 6-week short-term nature may not affect these personalities to the same degree. Evidently, if a degree of psychopathology existed as measured by Scale 3 (Cooperative) in the treatment group, the direction of change was determined in treatment, and a greater or lesser degree of dependency for each individual canceled out any large statistical effect. In fact, the raw data support this notion, with about half of

the treatment subjects increasing on Scale 3 and half decreasing. These changes were not, except in a very few cases, in the direction of the mean, and thus cannot be explained merely by a regression effect. A final consideration, since the pretest means of Scales 1, 3, and 6 were roughly similar in all three groups, is that these scales may not have differentiated normal from abnormal in this study.

Another pre-posttest change hypothesis advanced predicted that expressed concern scales would significantly decrease in the treatment group. In fact, all but Scales C (Body Comfort) and D (Sexual Acceptance) decreased significantly in the treatment group. The most robust of these changes was seen for Scale A (Self-Concept, $p < .000$), Scale B (Personal Esteem, $p < .006$), Scale E (Peer Security, $p < .000$), Scale G (Family Rapport, $p < .002$), and Scale H (Academic Confidence, $p < .001$). Thus, the most successful aspects of treatment may have been individual therapy, addressing identity and self-esteem issues; group and milieu therapy, addressing peer relationships; family therapy; and the school program. It should be noted that similar changes did not occur on these scales for either comparison group, lending credence to the notion of a clear treatment effect.

In explaining the lack of change in Scales C and D, it must be remembered that these two scales are highly intercorrelated and thus will tend to covary. Once again the raw data were examined, and it was found that more than one-half of the treatment subjects demonstrated a high degree of concern in these areas, which did not ameliorate with treatment or a somewhat lower degree of concern which

tended to increase at discharge. Thus the failure of Scales C and D to demonstrate a significant decrease may be related to treatment-efficacy issues. The face validity of these two scales appears to be fairly high; thus a somewhat less plausible argument is that these scales do not measure what they purport to measure.

Finally, the fact that the two comparison groups failed to yield pre-posttest differences (except in the previously mentioned Scales 2, 4, 5, and 8 in the abnormal untreated group) lends support to the discovery of a treatment effect observed on the MAPI in this study. However, these two untreated groups differed in a major way from the treatment group. That is, they may not have had as high a degree of motivation to "fake good" on the second testing. Although the treatment subjects were already assured of their discharge at the time of the repeat measurement, they may have been motivated to appear healthier at this time to insure their discharge.

Conclusions Regarding Stated Hypotheses Regarding Differences Between Groups on MAPI Scales 2 and 8

Taken together, the remaining two hypotheses regarding differences between groups on Scales 2 and 8 were designed to demonstrate whether the MAPI measures a "crisis effect" at the time of psychiatric hospital admission. Specifically, if a greater difference could be observed in the hospitalized group at the time of admission, which would not be evident at discharge, support would be provided for this notion of crisis. The results of the analysis of variance on the pretest on these two scales were significant and robust (Scale 2, $p < .000$; Scale 8, $p < .000$). As predicted, this difference was not

observed on posttest. Indeed, adolescents being hospitalized could be described as more emotionally labile (Scale 8) and more mistrustful and fearful of others (Scale 2). This finding is not only highly robust in the present study, but has been observed clinically (Green, personal communication, 1986) and has been observed in previous MAPI research (Pantle & Wassink, 1986), as well as in previous MCMI research (Piersma, 1986).

Conclusions Regarding Exploratory Analyses

It was previously discussed that an effort was made to determine pretest differences between groups to explain differences between the first and second testings observed in the abnormal group. The one-way analysis of variance procedures demonstrated that the abnormal group was significantly different on Scale 5 (Confident) on the pretest, as was already examined. Additionally, the abnormal untreated group had a significantly higher mean score on Scale 7 (Respectful).

What may have occurred in this study is some degree of sampling bias. Essentially, more adolescents with narcissistic-compulsive personality styles, with their attendant defensive mechanisms of denial, rationalization, and repression, comprised the abnormal untreated group. This parochial school sample may have represented a more psychologically sophisticated population, since this research study was approved at these schools. While these types of defenses allow the individuals to appear on the surface to be coping well, it represents an entrenched and difficult-to-change pattern. Thus the sample-selection process for "abnormal" subjects was constricted by

the condition of being untreated, since these more sophisticated participants were able to avoid hospitalization by the nature of their defenses, and to appear to be coping adequately, while suffering from a remarkable degree of personality psychopathology.

Implications of the Results for Theory and Personality Assessment in Adolescence

The theoretical development that guided the generation of hypotheses in this study was based on Millon's theory of personality and psychopathology as well as the nature of adolescent psychopathology. Consonant with the current multiaxial approach to diagnosis, Millon proposed a theory of personality in which an individual's characteristic manner of thinking, feeling, and behaving is enduring, predictable, and gives form and substance to the symptomatic presentation in mental illness. In Millon's (1981) words, symptomatology has to be considered within a personologic context. Additionally, studies of normal and mentally ill adolescents have provided mounting evidence for the stability of untreated psychopathology as well as personality traits in this age group.

The results of the present study suggest that, indeed, personality disorder does exist in adolescence, and, even in the event of treatment, the constellation of traits, affects, unconscious mechanisms, behaviors, cognitive style, interpersonal conduct, self-perception, and intrapsychic organization which comprise each personality configuration are relatively enduring. Short-term treatment, while affecting personality, does appear to have a much

more profound effect on the presentation of symptomatic concerns, as measured by the MAPI.

It is interesting that classical research on adolescence has identified a subgroup of adolescents for whom the pathway for traversing this period is clearly aberrant, enduring, and not a product of mere developmentally expected crisis. As well, a more recent epidemiological study identifies "caseness" as meeting DSM III diagnostic criteria as well as "need for treatment" and ties this definition of psychiatric disorder to such variables as history of physical abuse, lower self-concept, early sexual involvements, and parents who are less caring (Kashani et al., 1987). It would seem intuitive that these discriminating variables are not very often recent, self-limiting events, but rather the by-products of longer-standing difficulties in living, thus producing what may become a more chronic maladaptive pattern of relating. Despite these observations and the body of evidence reviewed in the present study, there remains a most tenacious clinical practice of diagnosis of adjustment disorder in adolescence, as opposed to a multiaxial determination of the presence of personality disorder and symptom presentation, and thus a much improved guide for treatment.

The results of this research for personality measurement and treatment in adolescence are clear. Not only must current symptomatology be identified and treated, but also the underlying maladaptive aspects of the personality pattern. As a treatment-outcome measure, the current study has contributed to the validation of the Millon Adolescent Personality Inventory. This measure does appear to

distinguish personality traits from symptomatology as well as demonstrate the enduring nature of these personality patterns. However, despite Millon's assertion of the unvarying nature of personality, this study demonstrates that even short-term treatment of an intensive nature can change and affect personality traits. Longitudinal research is needed to determine how lasting this treatment effect can be and what are the most effective follow-up methods to ensure long-term change.

Indications for Future Research

Further research to help validate the Millon Adolescent Personality Inventory could take many directions.

Outcome research. A larger sample replication of this study with a careful matching of control subjects on degree of psychopathology (especially on Scales 2, 4, 5, and 8, which appear to be clear indicators of change in the hospitalized group) could be of considerable interest and benefit in understanding the nature of these MAPI scales. Another possible pathway of research using the MAPI as an outcome measure would be to more clearly specify the various inpatient treatment approaches and group subjects who specifically score higher on certain MAPI scales in accordance with various treatment approaches. Additionally, research using the MAPI as a treatment outcome measure on other populations is needed.

Longitudinal research. A replication of the well-designed epidemiological studies by Kashani et al. (1987) and Weiner and Del Gaudio (1976), but using the MAPI as one of the measures of

psychopathology, would be of interest, especially if follow-up assessments over time of both those who seek treatment and those who do not were conducted. This would provide even more robust evidence of the MAPI's validity as a measure of psychopathology.

Research involving various MAPI scales. As has been conducted with the MCMI, research designed to evaluate the validity of each MAPI scale is needed. For example, studies involving the Self-Concept Scale A, a rather crucial indicator of mental health in adolescence, could be designed in which multiple measures of self-concept were employed and compared in a sample judged clinically to be deficient in this dimension. Research and development also appear to be necessary to improve the MAPI's ability to diagnose psychiatric disorders such as major affective disorder and psychosis.

Research involving the validity and reliability scales of the MAPI. As was successfully investigated in the MCMI, research designed to assess the validity and reliability scales of the MAPI would be of interest. According to the recent work by Van Gorp and Meyer (1986), the MCMI (like many self-report personality measures) may have the least ability to detect a fake good test-taking set. Similar research needs to be conducted for the MAPI, especially with the spurious findings in this study of many high score 4-5's in a high school population of adolescents. Despite the reassurance provided by the investigator in the present study of no untoward effects from participation in this study, the MAPI may well not detect a subject who is bright and intent on portraying him or herself in a good light.

Limitations of Static-Group Comparison Designs

As was previously discussed in Chapter III, the pre-experimental static-group comparison design has certain threats to internal validity. Specifically, if the groups differ on posttest, this difference could well have come about through the differential recruitment of persons making up the groups. As was previously discussed, some sampling bias was observed in the abnormal group. This group comprised more high Scale 5-7's (narcissistic-compulsive personalities). Thus selection factors operated in this group, and the definition of being "abnormal" was constricted by the condition of being untreated. In other words, these subjects may have avoided treatment by virtue of their sophisticated defenses. Mortality, another threat to validity in this design, was not apparently operant. All subjects, except for one in the treatment group, once entered into the study, completed the second measurement. A regression toward the mean effect may certainly occur in subjects selected for their extremeness on a pretest measurement. Once again, since observable differences did not occur in either comparison group, it is unlikely that a regression effect was occurring solely in the treatment group. An improvement to this study's design would be a scale-by-scale matching and comparison between the treatment group and an untreated "abnormal" group, along with including a normal control group for comparison purposes.

The findings of this study cannot be generalized to all adolescent inpatient populations. As previously described, the Short-Term

Unit is a unique treatment facility selecting its admittees on the basis of treatability within a 6-week framework. Also, the adolescent comparison group samples were selected from parochial schools to approximate the cultural characteristics of the inpatient group. Thus the findings of this study are generalizable only to a similar population.

APPENDICES

APPENDIX A

THE MILLON ADOLESCENT PERSONALITY INVENTORY

Millon Adolescent Personality Inventory — MAPI(C)

by Theodore Millon, Catherine J. Green, Robert B. Meagher, Jr.

NATIONAL COMPUTER SYSTEMS

Daily Clinical Interpretive Report

DIRECTIONS:

1. Use a soft, black lead pencil only and make a heavy, dark mark when filling in the circles.
2. If you make a mistake or change your mind, please erase the mark fully and then fill in the correct circle.
3. Fill in the grids according to the directions on the right side of the page. Do not fill in the special code sections below. Your counselor will complete these.
4. The following pages contain a list of statements that young people use to describe themselves. They are printed here to help you in describing your feelings and attitudes. Try to be as honest and serious as you can in marking the statements since the results will be used to help your counselor learn about you and help you plan your future.
5. Do not be concerned that a few of the statements will seem unusual to you; they are included to help teenagers with many types of problems. When you agree with a statement or decide that it describes you, fill in the T to mark it true (● T). If you disagree with the statement or decide that it does not describe you, fill in the F to mark it false (T ●). Try to mark every statement even if you are not sure of your choice. If you have tried your best and still cannot decide, mark the F for false.
6. There is no time limit for completing the inventory, but it is best to work as rapidly as is comfortable for you.
7. This form will be scored by computer and the results will be kept confidential.
8. You may begin with the first statement on the next page after filling in the Name grid and information chart on this page.

DO NOT WRITE IN THIS SPACE 120941

GRID DIRECTIONS Print your name in the boxes, last name first - skip a box then as much of your first name as possible. Then blacken the circle below each box which corresponds to the letter in the box. Blacken the blank circles below empty boxes. In a similar manner, fill in the grids for Major Problems, ID Number (optional), Sex and Age. Either Name or ID Number grid must be completed.

NAME

COUNSELOR OR CLINICIAN CODES									
Q	R	S	T	U	V	W	X	Y	Z

ID NUMBER	AGE

Which two of the following activity areas do you enjoy the most?

1st	ACTIVITIES	2nd
○	Anima Care	○
○	Arts Crafts	○
○	Dramatic Entertaining	○
○	Family Activities	○
○	Fantasy Daydreaming	○
○	Mechanics Fixing	○
○	Outdoor Nature	○
○	Reading Writing	○
○	Religious Work	○
○	Science Math	○
○	Social Dating	○
○	Sports Athletics	○
○	Other	○

Which two of the following trouble you the most?

1st	PROBLEMS	2nd
○	Body Looks	○
○	Career Goals	○
○	Court Problems	○
○	Drugs Alcohol	○
○	Family Life	○
○	Fearful Worrying	○
○	Lack of Confidence	○
○	Lack of Friends	○
○	Lonely Depressed	○
○	Moody Irritable	○
○	Restless Bored	○
○	Schoolwork	○
○	Sexual Feelings	○
○	Sick Tired	○
○	Other	○

SEX

○ Male ○ Female

CURRENT SCHOOL GRADE

Jr. or Sr. High School
7 8 9 10 11 12

College
1 2 3 4

Not Attending ○

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ScorForm™ 45102

1 T F I feel good showing my body in a bathing suit.

2 T F I almost always think before I act.

3 T F My parents have made a very good home for their family.

4 T F I stay cool even when I'm really angry with someone.

5 T F I have a strong need to feel like an important person.

6 T F I get a lot of satisfaction in my school work.

7 T F I enjoy thinking about sex.

8 T F I sort of feel sad when I see someone who's lonely.

9 T F I'm sure of my feelings about most things.

10 T F I always try to do what is proper.

11 T F I am a quiet and cooperative person.

12 T F I'm pretty sure I know who I am and what I want in life.

13 T F I feel guilty when I have to lie to a friend.

14 T F I get so touchy that I can't talk about certain things.

15 T F I try hard to do well at almost everything I do.

16 T F I become very excited or upset once a week or more.

17 T F When I get angry, I usually cool down and let my feelings pass.

18 T F I'm quite sure that I am sexually attractive.

19 T F I get along quite well with the other children at home.

20 T F I like to follow instructions and do what others expect of me.

21 T F I have more friends than I can keep up with.

22 T F I am very uneasy when I'm supposed to tell people what to do.

23 T F I like the way I look.

24 T F I do my very best not to hurt people's feelings.

25 T F I look forward to growing up and making something of myself.

26 T F I am more worried about finishing things that I start than most people.

27 T F I can depend on my parents to be understanding of me.

28 T F I would never use drugs, no matter what.

29 T F Sex is enjoyable.

30 T F Rather than demand things, people can get what they want by being gentle and thoughtful.

31 T F It is very important that children learn to obey their elders.

32 T F I have a pretty clear idea of what I want to do.

33 T F It is easy for me to take advantage of people.

34 T F I'd like to trade bodies with someone else.

35 T F I like to arrange things down to the last detail.

36 T F In this world, you either push or get shoved.

37 T F My social life is very satisfying to me.

38 T F I don't think I have as much interest in sex as others my age.

39 T F When someone hurts me, I try to forget it.

40 T F I enjoy getting one of the highest grades on a test.

41 T F My parents are very kind to me.

42 T F I have a strong desire to win any game I play with others.

43 T F I think I have a good build.

44 T F I have almost no close ties with others my age.

45 T F I have faith that human nature is good.

46 T F If I see a person I know from a distance, I usually try to avoid him.

47 T F When I don't get my way I usually lose my temper.

48 T F I have a better idea of the kind of person I am than other teenagers do.

49 T F My friends seem to turn to me more than to others when they have problems.

50 T F What this country really needs are more serious and devoted citizens.

51 T F I make friends easily.

52 T F I don't like looking at myself in the mirror.

53 T F I usually let other people have their own way.

54 T F I'm always busy in lots of social activities.

55 T F I don't seem to know what I want out of life.

56 T F Other people my age seem more sure than I am of who they are and what they want.

57 T F When I was a young child, my parents felt very proud of me.

58 T F I have not seen a car in the last ten years.

59 T F I often doubt whether people are really interested in what I am saying to them.

60 T F Someone else will probably have to support me when I'm an adult.

61 T F I find it hard to feel sorry for people who are always worried about things.

62 T F I seem to have a problem getting along with other teenagers.

63 T F Thinking about sex confuses me much of the time.

64 T F I would much rather follow someone than be the leader.

65 T F To get ahead in this world I'm willing to push people who get in my way.

66 T F I am pleased with the way my body has developed.

67 T F I can see more sides of a problem better than others can.

68 T F I would rather be almost anyplace but home.

69 T F Becoming involved in other people's problems is a waste of time.

70 T F I guess I'm a complainer who expects the worst to happen.

71 T F I often do things for no reason other than it might be fun.

72 T F It is not unusual to feel lonely and unwanted.

73 T F I feel pretty aimless and don't know where I'm going.

74 T F I do my best to stop anyone from trying to boss me.

75 T F If I see someone yawn, I often start to yawn, too.

76 T F My parents often tell me I'm no good.

77 T F I am a dramatic and showy sort of person.

78 T F I sometimes feel I am in this world all alone.

79 T F I really hate to have my work pile up.

80 T F I would rather be direct with people than avoid telling them something they don't like.

81 T F I'm pretty immature about sexual matters.

82 T F I'd rather just lie around doing nothing than work or go to school.

83 T F Lots of kids seem to have it in for me.

84 T F Among the most important things a person can have are a strong will and the drive to get ahead.

85 T F At no time in my life have I had any hair on my head or my body

86 T F I often get so stoned (either from alcohol or drugs) that I don't know what I'm doing.

87 T F Punishment never stopped me from doing whatever I wanted

88 T F I very often think I am not wanted by others in a group

89 T F Others my age seem to have things together better than I do.

90 T F People can influence me quite easily.

91 T F I often feel so angry that I want to throw and break things.

92 T F I find it hard to understand why people cry at a sad movie

93 T F I often say things that I regret having said

94 T F I guess I depend too much on others to be helpful to me

95 T F I'm not answering these questions honestly at all

96 T F I have a pretty hot temper

97 T F I feel left out of things socially

98 T F I like to be the one in authority to take charge of things

99 T F I've just about given up as far as school is concerned

100 T F I like it at home

101 T F I don't mind that other teenagers are not interested in my friendship

102 T F I think teenagers are expected to know too much about sex

103 T F I am very pleased with all the things I have done up to now

104 T F Others my age never seem to call me to get together with them.

105 T F I like to tell others about the things I have done well

106 T F I am glad that feelings about sex have become a part of my life now.

107 T F I get very frightened when I think of being all alone in the world

108 T F If you asked me to describe myself I wouldn't know what to say

109 T F I don't depend much on other people for friendship.

110 T F I doubt if I'll make much of myself in life.

111 T F If I read these questions a month from now, I'm sure I would change most of my answers.

112 T F To see someone suffering doesn't bother me.

113 T F I'm jealous of the special attention that the other children in the family get.

114 T F Most people are better looking than I am.

115 T F All my life I have to "blow up" every now and then.

116 T F A quiet hobby is more fun for me than a party.

117 T F I get upset when I see a very sick person

118 T F I get upset when things I don't expect happen to me.

119 T F I worry about my looks

120 T F I'm among the more popular kids at school.

121 T F There are always a number of reasons why most problems can't be solved

122 T F I do my best to get along with others by being pleasant and agreeable

123 T F Sex is disgusting

124 T F I have flown across the Atlantic 30 times last year.

125 T F It is good to have a regular way of doing things so as to avoid mistakes.

126 T F My family is always yelling and fighting

127 T F I would like to continue in school and college as long as I can.

128 T F I seem to fit in right away with any group of new kids I meet.

129 T F There's nothing I like more than getting in a car and zooming off.

130 T F I've done most things in my life very well.

131 T F Lonely kids usually deserve to be lonely.

132 T F If I want to do something, I just do it without thinking of what might happen.

133 T F So little of what I have done has been appreciated by others.

134 T F I haven't been paying much attention to the questions on these pages.

135 T F I make nasty remarks to people if they deserve it.

136 T F I often feel as if I'm floating around, sort of lost in life.

137 T F I'm ashamed of my body

138 T F Nobody seems to care about me at home.

139 T F I think I'm better looking than most of the kids I know.

140 T F I'm very mature for my age and know what I want to do in life

141 T F I like being in a crowd just to be with lots of people

142 T F In many ways I feel very superior to most people

143 T F Most other teenagers don't seem to like me.

144 T F Most people can be trusted to be kind and thoughtful.

145 T F I like to flirt a lot

146 T F I don't really care what I'll do in life.

147 T F I often feel that others do not want to be friendly to me

148 T F It is very difficult for me to stop feelings from coming out

149 T F I worry a great deal about sexual matters

150 T F I can control my feelings easily.

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APPENDIX B

RESEARCH ASSISTANT'S INSTRUCTIONS FOR ADMINISTERING THE MAPI RESEARCH FACE SHEET

RESEARCH ASSISTANT'S INSTRUCTIONS FOR ADMINISTERING THE MAPI

1. Obtain consent of patient and parent/guardian.

2. Administer the 1st MAPI on all admitted patients on their 3rd admission day. Read the instructions printed on the test form.

3. Administer the 2nd MAPI on the day before discharge on all patients except:
   a. Patients who are on the unit longer than 6 weeks should have their 2nd MAPI no later than 8 weeks after admission.
   b. Patients discharged by parents or guardians prior to completion of treatment, and this is considered a precipitous discharge.

4. Follow the directions for administration on the front of the MAPI. Instruct the patient to enter age, sex, and grade. <u>Do not enter name</u>.

5. Code the following on the MAPI test form:

   ID NUMBER: Enter hospital number in the last five boxes.
   Enter "0000" in the first four boxes.

   CODE S:
   0 = no previous counseling or therapy
   1 = previous counseling or therapy
   2 = unknown treatment history

   CODE T:
   0 = natural father in home
   1 = adoptive father in home
   2 = stepfather in home
   3 = foster father in home
   4 = no father in home

   CODE U:
   0 = natural mother in home
   1 = adoptive mother in home
   2 = stepmother in home
   3 = foster mother in home
   4 = no mother in home

   CODE V:
   0 = 1st MAPI
   1 = 2nd MAPI

6. Complete the Research Face Sheet at the time of discharge.

7. Instruct the therapist to complete the Therapist Rating Scale.

RESEARCH FACE SHEET

FOR STAFF USE ONLY

HOSPITAL NUMBER _____

BIRTH DATE _____

ADMISSION DATE _____

DISCHARGE DATE _____

PRIMARY THERAPIST _____

ADMISSION DIAGNOSIS _____

DATE OF 1ST MAPI _____

DATE OF 2ND MAPI _____

APPENDIX C

THERAPIST RATING SCALE

Hospital No. _____

THERAPIST RATING SCALE

Your patient from the Short Term Unit, identified by the above hospital number, is involved in a study using the Millon Adolescent Personality Inventory. Please rate this patient who is now being discharged, or who has been hospitalized for eight weeks (whichever comes first), on the basis of how well you believe the treatment goals have been accomplished:

This patient's treatment goals in general can be described as (circle one):

1	2	3	4	5
All goals were met	Many of the goals were met	Some of the goals were met	A few of the goals were met	None of the goals were met

APPENDIX D

PROPOSAL SUBMITTED TO THE MICHIGAN STATE UNIVERSITY COMMITTEE ON RESEARCH INVOLVING HUMAN SUBJECTS

RESEARCH CONSENT FORMS

PROPOSAL SUBMITTED TO THE MICHIGAN STATE UNIVERSITY COMMITTEE ON RESEARCH INVOLVING HUMAN SUBJECTS

1. Abstract

Through the years a variety of objective psychological tests have been developed for use with children and adolescents. In most cases these instruments have lacked the currently available psychometric sophistication, or they have not been founded on an integrated theory of personality, or they have been initially developed for other populations and later normed on adolescents.

In contrast, the Millon Adolescent Personality Inventory (MAPI) was constructed specifically for adolescents, is founded on Millon's theory of personality and psychopathology, and was developed in accordance with a three-stage validation process. Millon's theory proposes that there are eight basic personality patterns and that these are enduring styles of interacting, thinking, and feeling, in contrast to more transient clinical symptoms. The MAPI is designed to measure both personality and symptomatic concerns in adolescents.

The purpose of this study is to evaluate the changes that take place on the MAPI between admission and discharge for a sample of adolescent psychiatric inpatients (n = 30). Two comparison groups of high school students will also be administered the MAPI at six-week intervals. One group (n = 30) will be selected on the basis of having at least two personality scales elevated above a base rate score of 85 (untreated, abnormal Group B). Another group (n = 30) will be selected

on the basis of their MAPI scores being within the normal range (normal Group C) on the first measure.

It is hypothesized that the hospitalized Group A will evidence greater changes on the MAPI following treatment than the two comparison groups, that Personality Scales 1 through 8 will evidence greater stability than Expressed Concerns Scales A through H, that Scales 2 and 8 are reactive to the crisis of hospitalization and will thus be highest in the treatment group's admission MAPI, and that hospitalized adolescents will have an increase in Personality Scales 4 and 5 upon discharge.

2. Requirements of Population and Method of Recruiting Subjects

The sample of hospitalized adolescents for Group A will be selected from Pine Rest Christian Hospital's Short Term Unit in Grand Rapids, Michigan. These will be consecutively admitted patients whose parents provide their consent for their son or daughter's participation in the research project. These patients will be recruited for participation in this study on their third day of hospital admission by a research assistant who will explain the purpose of the study and administer the instrument.

The sample of high school students will be selected from high schools in the Grand Rapids community and from communities in the surrounding area. These students' volunteer participation in taking the MAPI will be solicited through a brief presentation of the purpose of the research to psychology and social science classes. These

students will be asked to obtain their parents' consent and then to complete the inventory at a designated time.

A repeat measure of the MAPI will be administered to all participants in the study at a six-week interval. Excluded from this second measurement will be any hospitalized adolescent whose parents or guardians discharge their son or daughter precipitously from the hospital prior to completion of treatment. Consent for participation in this second measure will be obtained at the beginning of the research project. All of the high school subject participants will complete the MAPI at the second administration regardless of whether their scores on the first MAPI meet the inclusion criteria for Group B or C. This procedure will insure that unnecessary attention will not be focused on any individual's scores.

3. Analysis of Risk-Benefit Ratio

A. Assessment of Potential Risks

This research project does not involve physical, economic, or legal risk on the part of the subjects. Any risk involved would best be classified as psychological in nature, although assessment of any degree of psychological risk is minimal to absent. In the process of completing a personality inventory, subjects may become aware of individual test items which they have some difficulty in answering, or create some confusion. The test instructions explain that some items may seem unusual, and if undecided about an item, it is best to mark it false.

B. Procedures for Minimizing Potential Risks and Maintaining Confidentiality

A number of procedures will be taken to minimize any risk the subjects may incur through participation in this research. First, for purposes of the research and data collected, hospitalized subjects will be identified by their hospital number and not by name. Information on family constellation and previous mental health treatment will be obtained from the hospital record by the research assistant-staff member and recorded in code form on the MAPI test form. In addition, the research assistant will enter data on the Research Face Sheet, which is also identified by the subject's hospital number. Finally, the research assistant will request the patient's individual therapist to complete the Therapist Rating Scale, which is also identified by the subject's hospital number.

For the high school subjects, instructions for completing the inventory, for coding their identification number, their family constellation, and previous mental health treatment history will be provided by the researcher at the time of the test administration. These subjects will be identified by code number only, and thus this information will be collected anonymously and remain confidential. Individual subjects in the high school groups will be informed that their test results will not be provided to school personnel or placed in their files. The experimenter will not discuss individual test results with anyone, nor will individual participants' data be available at the conclusion of the data analysis. Results of the data

analysis will be made available in aggregate form for those participants or their parents who request them.

Second, subjects in the treatment group may discuss any reactions to the personality test with their therapists if they desire. High school subjects will have access to their usual counseling services available through their school if concerns arise as a result of this testing.

It is believed that these safeguards will be sufficient in protecting the rights of the subjects and minimizing any psychological risk.

C. Assessment of Benefits for Individual Subjects and Potential Benefits to Society

The potential benefits to be gained by the individual participant in this type of instrument-validation research are best described as increasing adolescents' awareness of the availability of psychologists and counselors for helping troubled youth and the role of assessment devices in the work of these professionals. Since individual results of the data analysis will not be made available to study participants, their individual benefit will derive mainly from the greater awareness of psychological services.

In the case of some of the hospitalized adolescents, a psychological test battery may be deemed necessary to the diagnosis and treatment planning for the individual. Those patients who, as a result, complete a MAPI on admission as part of this process will benefit from their individual results which are interpreted by the team psychologist and made available to the patient's therapist. However, these results are

never shown in their scored or raw form, nor in the test report, to an adolescent or his or her parent/guardian. The individual benefit derives from the therapist's greater understanding of the individual's dynamics in the process of treatment. In addition, the treatment group, while not having access to their individual results (except as described earlier), will likely become aware of their concerns and problems as a result of their treatment in a psychiatric hospital.

The benefits as a result of this study to professional psychologists, social workers, and school counselors, and thus to society, will be much greater. For some time there has been a real dearth of clinical assessment devices suitable for adolescent populations. The MAPI has a promising future but needs to withstand the rigors of validation research. This research has been approved by National Computer Systems, Inc., a corporation that distributes and scores the Millon instruments and that maintains a vital interest in amassing empirical data regarding the validity of these instruments.

4. Description of Procedures for Informed Consent

Since this research involves minors, informed consent will be provided by the parents/guardians of the hospital subject group at the time of the third hospital admission day. In describing the research project, emphasis will be placed upon the fact that Pine Rest Christian Hospital is committed to the provision of the best mental health services possible, and one way of doing that is to subject its programs and assessment and treatment procedures to ongoing research. Parents will

be informed that the purpose of this study is to learn more about one of the adolescent psychological tests and how it contributes to treatment. Statements regarding the length of time needed to complete the inventory, confidentiality, the absence of harmful effects, as well as effects on treatment, freedom to withdraw from the study without penalty, and access to the results in aggregate form are included in the consent form.

For the high school group, students will be required to take a consent form home to be signed by their parents/guardians. In describing the research, emphasis will be placed on the need for psychologists and counselors to better understand the concerns and problems of young people. Upon receipt of this signed consent, the adolescent will be allowed to participate in this study. This consent form, in addition to the above-described content, also designates clearly that test results will not be made available to school personnel or files.

In all cases, adolescent subjects will also be asked to sign the consent form. Subjects will be informed that they will complete the inventory at this time and once again in six weeks.

This research project has been approved by the Pine Rest Christian Hospital Research Committee and National Computer Systems, Inc. Procedures for approval to conduct this study in the various high schools will also be followed.

RESEARCH CONSENT FORM

Patient_____ Date_____

The staff of Pine Rest Christian Hospital is committed to providing the best possible mental health services to each person coming to us. One of the ways we do this is to subject our programs, diagnostic procedures, and treatment methods to study and analysis through ongoing research activity. In this study we hope to learn more about our assessment procedures and how they contribute to treatment. We ask your cooperation in this activity by agreeing to have your son or daughter take a personality test which is used regularly in our diagnosis and treatment planning. This test will be administered at the time of admission and again at the time of discharge. This test is usually completed in 20 to 30 minutes and is computer scored. The data will be treated as confidential material, and your own and your son or daughter's identity will not be revealed. Participation in this study will have no harmful effects and will not alter your treatment program in any way.

I understand that I am free to discontinue my son or daughter's participation in this project at any time without penalty.

I understand that, at my request, I can receive additional explanation of the study after my son or daughter's participation is completed and that I may obtain results of the entire study upon my request.

I hereby agree to allow my son or daughter to participate in this research project being conducted by Bonnie J. Fons, M.S., M.A., under the supervision of Dr. Mark Pantle.

Signed_____ _____
Patient Parent or Guardian

Date_____ Date_____

Witness_____ Date_____

RESEARCH CONSENT FORM

Student_____ Date_____

Dear Parent or Guardian,

I am conducting a study about adolescent personality and developmental concerns in connection with my work at the Center for Professional Psychology, Grand Rapids, Michigan, and my doctoral degree requirements in Counseling Psychology at Michigan State University. Adolescents from area high schools and also from Pine Rest Christian Hospital are participating in this study, which will help psychologists to better understand the concerns and problems of young people. In this study we hope to learn more about one of the instruments used to help define adolescents' concerns. I am asking your cooperation in this activity by agreeing to have your son or daughter take a personality test which is used regularly in counseling adolescents. This test will be administered now and once again in approximately six weeks. The test is usually completed in 20 or 30 minutes and is computer scored. The data will be treated as confidential, and your own and your son or daughter's identity will not be revealed. The collection of these data will not alter your son or daughter's school program in any way and will be administered during a regular school day. The results of your child's responses will not be made available to school personnel or school files, and he or she will only be identified by a code number. Participation in this study will not have any harmful effects.

I understand that I am free to discontinue my son or daughter's participation in this project at any time without penalty.

I understand that, at my request, I can receive additional explanation of the study after my son or daughter's participation is completed and that I may obtain results of the entire study upon my request.

I hereby agree to allow my son or daughter to participate in this research project being conducted by Bonnie J. Fons, M.S., M.A., Center for Professional Psychology, Grand Rapids, Michigan, (616) 940-1658, under the supervision of Dr. William C. Hinds, Ph.D., Michigan State University, East Lansing, Michigan.

Signed_____ _____
Patient Parent or Guardian

Date_____ Date_____

Witness_____ Date_____

APPENDIX E

LIST OF MEANS OF MAPI PRETEST SCORES FOR GROUPS A, B, AND C ON SCALES 1 THROUGH 8 AND A THROUGH H

Table E.1: List of Means of MAPI Pretest Scores for Groups A, B, and C on Scales 1 Through 8 and A Through H.

Scale	Adolescent Inpatients Group A (Mean)	Abnormal Untreated Group B (Mean)	Normal Group C (Mean)
1	36.70	32.33	35.53
2	69.56	40.00	42.86
3	51.40	50.70	46.26
4	51.63	66.63	57.96
5	40.86	63.80	53.26
6	53.76	52.26	51.70
7	33.83	56.90	48.96
8	79.70	51.93	51.36
A	71.96	44.46	50.20
B	72.70	56.30	60.36
C	61.56	53.03	57.46
D	61.06	46.86	49.26
E	64.66	46.13	55.23
F	54.50	40.36	40.70
G	83.46	53.26	56.03
H	75.76	46.70	51.90

APPENDIX F

RESULTS OF FREQUENCY ANALYSIS OF MAPI PRETEST SCORES FOR GROUPS A, B, AND C ON PERSONALITY SCALES 1 THROUGH 8

Table F.1: Results of Frequency Analysis of MAPI Pretest Scores for Groups A, B, and C on Personality Scales 1 Through 8.

Scale	BR Score	Adolescent Inpatients Group A (n)	Abnormal Untreated Group B (n)	Normal Group C (n)
1	0-60	26	27	25
	61-74	3	2	5
	75-84	1	0	0
	> 85	0	1	0
2	0-60	14	23	26
	61-74	2	1	4
	75-84	2	0	0
	> 85	12	6	0
3	0-60	17	19	22
	61-74	2	1	4
	75-84	6	1	4
	> 85	5	9	0
4	0-60	18	12	15
	61-74	3	2	9
	75-84	5	3	6
	> 85	4	13	0
5	0-60	23	13	21
	61-74	0	1	8
	75-84	4	5	1
	> 85	3	11	0
6	0-60	17	17	20
	61-74	1	1	7
	75-84	5	3	3
	> 85	7	9	0
7	0-60	25	17	24
	61-74	4	1	2
	75-84	1	1	4
	> 85	0	11	0
8	0-60	7	19	22
	61-74	1	1	5
	75-84	6	3	3
	> 85	15	7	0

APPENDIX G

ANOVA OF MEAN MAPI SCALE 1 PRETEST (INTROVERSIVE SCALE)

Table G.1: ANOVA of Mean MAPI Scale 1 Pretest (Introversive Scale)

Source of Variation	Sum of Squares	df	Mean Squares	F	Signif. of F
Between	306.6979	2	153.3489	0.393	0.676
Within	33924.3789	87	389.9354		
Total	34231.0703	89			

APPENDIX H

ANOVA OF MEAN MAPI SCALE 3 PRETEST (COOPERATIVE SCALE)

Table H.1: ANOVA of Mean MAPI Scale 3 Pretest (Introversive Scale)

Source of Variation	Sum of Squares	df	Mean Squares	F	Signif. of F
Between	464.9751	2	232.4875	0.302	0.740
Within	67055.2832	87	770.7504		
Total	67520.2500	89			

APPENDIX I

ANOVA OF MEAN MAPI SCALE 4 PRETEST (SOCIABLE SCALE)

Table I.1: ANOVA of Mean MAPI Scale 4 Pretest (Sociable Scale)

Source of Variation	Sum of Squares	df	Mean Squares	F	Signif. of F
Between	3402.2553	2	1701.1274	2.716	.071
Within	54492.8379	87	626.3544		
Total	57895.0859	89			

APPENDIX J

ANOVA OF MEAN MAPI SCALE 5 PRETEST (CONFIDENT SCALE)

Table J.1: ANOVA of Mean MAPI Scale 5 Pretest (Confident Scale)

Source of Variation	Sum of Squares	df	Mean Squares	F	Signif. of F
Between	7906.5113	2	3953.2554	7.160	.001
Within	48036.0723	87	552.1387		
Total	55942.5781	89			

Results of Post-Hoc Comparison by Scheffe Method for MAPI Pretest Scores on Scale 5

Subset 1

Group	Group A (Treatment)	Group C (Normal)
Mean	40.86	53.26

Subset 2

Group	Group C (Normal)	Group B (Abnormal Untreated)
Mean	53.26	63.80

APPENDIX K

ANOVA OF MEAN MAPI SCALE 6 PRETEST (FORCEFUL SCALE)

Table K.1: ANOVA of Mean MAPI Scale 6 Pretest (Forceful Scale)

Source of Variation	Sum of Squares	df	Mean Squares	F	Signif. of F
Between	68.4398	2	34.2199	.048	.953
Within	62201.4590	87	714.9592		
Total	62269.8984	89			

APPENDIX L

ANOVA OF MEAN MAPI SCALE 7 PRETEST (RESPECTFUL SCALE)

Table L.1: ANOVA of Mean MAPI Scale 7 Pretest (Respectful Scale)

Source of Variation	Sum of Squares	df	Mean Squares	F	Signif. of F
Between	8240.2708	2	4120.1348	6.921	.001
Within	51791.7676	87	595.3076		
Total	60032.0313	89			

Results of Post-Hoc Comparison by Scheffe Method for MAPI Pretest Scores on Scale 7

Subset 1		
Group	Group A (Treatment)	Group C (Normal)
Mean	33.83	48.96
Subset 2		
Group	Group C (Normal)	Group B (Abnormal Untreated)
Mean	48.96	56.90

LIST OF REFERENCES

LIST OF REFERENCES

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