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Screening instruments for dissociative disorders: Their evaluation in a college population

Angiulo, Michael James, Ph.D.

The University of Arizona, 1993

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SCREENING INSTRUMENTS FOR DISSOCIATIVE DISORDERS: THEIR EVALUATION IN A COLLEGE POPULATION

by

Michael James Angiulo

A Dissertation Submitted to the Faculty of the

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

In Partial Fulfillment of the Requirements
For the Degree of

DOCTOR OF PHILOSOPHY

In the Graduate College

THE UNIVERSITY OF ARIZONA

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THE UNIVERSITY OF ARIZONA
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As members of the Final Examination Committee, we certify that we have read the dissertation prepared by Michael James Angiulo entitled Screening Instruments for Dissociative Disorders: Their Evaluation in A College Population

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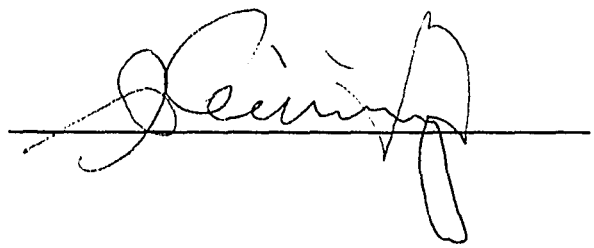
Signed: 

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ABSTRACT

In the interest of early identification and prevention of dissociative disorders, this author has contributed to the research history of various screening instruments and has commented on the degree to which such instruments are appropriate for screening subjects in a college population. The Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) was administered to approximately 2500 college freshmen. Subjects from various levels of the distribution of DES scores were recalled to the laboratory for further testing on the abbreviated version of the Structured Clinical Interview for Dissociative Disorders (Mini-SCID-D) (Steinberg, Rounsaville & Cicchetti, 1987) to determine how many of these subjects might actually qualify for a diagnosis of dissociative disorder. The results of this study supported the factor structure of the DES as reported by Ross, Joshi and Currie (1991). In addition, the DES evidenced a significant predictive relationship with the Mini-SCID-D. The research was designed to screen a population at large for dissociative tendencies, the results of which will be useful to people who wish to identify ostensibly normal individuals who may be at risk for dissociative disorders.

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CHAPTER 1

INTRODUCTION AND STATEMENT OF THE HYPOTHESIS

Dissociation has been of interest both for research purposes and in a clinical setting for over 100 years. Society's awareness of the long term effects of war, child abuse, dysfunctional families and stress has prompted the mental health system to address symptomatology related to the diagnosis of dissociative disorders (Aalpoel & Lewis, 1984; Abse, 1974; Cattell & Cattell, 1974; Kluft, 1988a; Nemiah, 1979, 1989; Sutker & King, 1984).

According to the American Psychiatric Association (1987), the dissociative disorders include a wide variety of syndromes whose common core is an alteration in consciousness, memory and/or identity. The onset of the symptoms may be sudden or gradual, and may be transient or chronic. The diagnostic category is sub-divided into depersonalization disorder, psychogenic fugue, psychogenic amnesia, dissociative disorders not otherwise specified and multiple personality disorder.

While impairments of memory and consciousness are often observed in the organic brain syndromes, dissociative disorders can be differentiated in etiology since they are "functional", that is, not caused by physical injury or disease of the brain. Dissociative disorders produce more impairment than would normally occur in the absence of trauma (Kihlstrom & Evans, 1979; Schacter & Kihlstrom, 1989).

After a diagnosis of organic brain syndrome has been ruled out, the clinician can then differentiate a functional disorder and screen for dissociative disorders. Although there may be a variety of causative factors resulting in dissociative disorders, the most consistent event related with their emergence appears to be psychological trauma which may include, but not be limited to, severe abuse, neglect and war.

Any consideration of dissociative disorders, as a group of mental illnesses, properly begins with a discussion of the dissociation concept itself (Kihlstrom, 1992).

Dissociation was formerly known as disaggregation (Janet, 1879). Over the years, the meaning of dissociation changed, particularly as it was introduced into the United States by researchers in the early part of this century. More recently, dissociation has become associated with a disturbance in one's consciousness, identity or memory (American Psychiatric Association's *Diagnostic and Statistical Manual Of Mental Disorders*, 3rd Edition, Revised) (DSM-III-R).

Various screening tools have been developed for the purpose of studying the role of dissociation and the natural history of dissociative disorders. Fagan and McMahon (1984) listed 20 behavioral characteristics and six objective experiences of dissociation based upon their extensive review of detailed retrospective reports of trauma experienced by adults. Putnam (1981) is cited by Kluft (1984) as proposing 13 childhood symptoms, including occurrences

of sustained repeated abuse, amnesia for abuse and marked fluctuations and variability in performance and abilities. Putnam identifies these as predictors of one or more of the dissociative disorders appearing in adulthood.

In light of other authors having devised predictor lists of the symptomatology of various dissociative disorders (Kluft, 1984), Fagan and McMahon (1984) address observations that teachers and parents may readily make in both the classroom and home setting regarding children at risk for dissociative pathology. Fagan advises utilizing other authors' checklists as a starting point to explore, with a referral source and the family, whether or not the child shows a sufficient number of behaviors to make a tentative diagnosis of a dissociative disorder. The authors of such checklists have identified some symptoms to be more pathognomonic than others. They present cutpoint scores that strongly suggest the child as being at risk for experiencing dissociative symptoms and a need for referral and evaluation. The authors note that perplexing forgetfulness, uneven performance and inconsistent school work regarding skills the child should have mastered, are significant indicators of a dissociative phenomena. Silberman, Putnam, Weingartner, Braun, and Post (1984), found no significant differences in learning and remembering abilities in patients diagnosed with dissociation when compared to a control group. These authors did note, however, there were "qualitative differences between the cognitive performance of patients and that of controls attempting to role-play alter personalities," for example multiple personality disorder.

The above mentioned lists have been utilized as screening instruments. The authors suggest that further evaluation and testing be performed prior to a formal diagnosis. As such, these instruments are not diagnostic tools, nor are any of the individual factors in isolation considered to be diagnostic of multiple personality disorder. Rather, it is the cluster of these symptoms after other types of disorders have been ruled out that suggests dissociative disorder might be considered further.

The above summaries have indicated various behavioral and cognitive indicators which would lead teachers, parents and mental health professionals to suspect dissociative pathology in children. These studies have strongly linked the development of dissociative reaction to early traumatic occurrences from which the child needed protection and used the defense of dissociation.

Many victims of abuse and other forms of trauma protect and defend themselves by dissociation. In doing so, they are able to emotionally detach from or forget the occurrence of the trauma. Dissociation is conceptualized on a continuum from mild dissociations in life, such as daydreaming, to more severe pathological forms as seen in multiple personality disorder (Bernstein & Putnam, 1986).

Very little data exist on the epidemiology of any of the dissociative disorders. Dissociative disorders were not the subject of inquiry in any major psychiatric epidemiology studies. Everything that can be said about the prevalence of dissociative disorders in North America in the 1980s and early

1990s is therefore guess work (Ross, 1989). It would be useful to identify those individuals with dissociative symptomatology within a normal population and a mentally ill population. This information would be valuable for research study and in clinical practice.

It is believed that a majority of individuals with dissociative disorders have witnessed or experienced some type of psychological trauma, abuse and/or neglect. It became apparent during World War II that the trauma veterans witnessed and experienced were associated with what we now call dissociative symptoms (at that time called shell shock).

The purpose of this research study is to examine screening instruments used to assess dissociative phenomena. Random selections from a college population were drawn to assess whether scores on the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) correlate with scores on the Mini-Structured Clinical Interview for Dissociative Disorders - Clinician Version (Mini-SCID-D) (Steinberg, Rounsaville & Cicchetti, 1990). With a better understanding of which cutpoints should be used, the information would be valuable to improve the correlation of scores on another instrument. In doing so, it will facilitate making a more accurate screening instrument of dissociative disorders. Furthermore, treatment might become more rapid and cost effective.

Until recently, there were no standardized instruments designed to yield uniform clinical diagnoses of dissociative disorders (Steinberg, et al. 1990). The DES has been the screening instrument most widely used. The DES will

be compared to the Mini-SCID-D (Steinberg, et al., 1987). The results from this research will aid in defining the cutpoints considered most valuable to be used in identifying those individuals at risk for pathological dissociative symptoms. Both the DES and the Mini-SCID-D are considered screening devices for dissociative disorders, although they are not considered diagnostic instruments.

Kihlstrom, Tataryn and Hoyt (1990) discussed the influence of Pierre Janet (1889, 1907) on the first dynamic Psychiatry (Haule 1986; Havens, 1973; Mayo, 1952; Perry & Lawrence, 1984). He used psychological principles in his attempt to organize the neuroses as Kraepelin organized the psychoses. Janet was significantly influenced by Jacksonian neurophysiology and adopted the term "psychological automatisms" which was introduced earlier by Despine (Ellenberger, 1970; Janet, 1879). Janet believed that these automatisms, preceded by an idea and accompanied by an emotion, represented a complex act finely tuned to external and internal circumstances. As such, Janet believed this reflected cognition, emotion and motivation. Such types of consciousness have been described by scientists and philosophers of the mind at least since the time of Kant (Hilgard, 1980b).

Charcot's term for this situation was condition seconde; Janet preferred the term disaggregation, translated into English as dissociation. Disaggregation referred to the fragmentation that was once considered integrated mental life. Modern researchers believe that disaggregation may have served Janet and his

theory, and perhaps the syndromes themselves, somewhat more descriptively than dissociation (Kihlstrom, et al., 1990. p. 4).

Patients with dissociative disorders were observed to have significantly higher hypnotizability scores on various measures than all other groups had (Frischholz, Lipman, Braun, & Sachs, 1992, pp. 1521 - 1525). These authors believed that a diagnosis of Post Traumatic Stress Disorder was an inaccurate description given to the anxiety disorder patients in their study. They found that patients with Post Traumatic Stress Disorder had a higher mean hypnotizability score than normal subjects in prior studies (Frischholz, 1992, pp. 1521-1525). Other researchers have found measuring the hypnotizability in an individual assessment may be useful in differentiating dissociative disorders (Frischholz, et al., 1992, pp. 1521-1525)

The null hypothesis for this experiment is as follows: Scores on the DES have no significant correlation or prediction value with dissociative disorder diagnoses as yielded by the Mini-SCID-D. The alternative hypothesis is as follows: Scores on the DES predict and highly correlate with scores on the Mini-SCID-D.

CHAPTER 2

REVIEW OF THE LITERATURE

One of the most important aspects in all fields of medicine is the accurate diagnosis of each individual's disease. With the proper diagnosis, the physician and other care providers are better able to identify, describe and understand the individual and develop an effective treatment plan. A wrong diagnosis has potential hazards. It creates a disservice to the individual by an inaccurate classification and, consequently, can lead to inappropriate treatment. Such treatment, including therapy and medications, may even be dangerous to the individual.

Inaccurate diagnoses have likely been the result of a lag in the development of the science. For example, some people now diagnosed with major depressive disorder, with psychotic features, had been diagnosed with schizophrenia earlier this century because they had presented with auditory hallucinations and social withdrawal. Such symptoms can now be better understood as characteristics of an affective disorder, rather than a disturbance in one's thinking.

The mental health profession has used diagnostic observation and interviews to detect problem areas in individuals. At times, psychological tests have aided the professional in corroborating the findings. Psychological tests became particularly popular in the 1940s, when they were predominantly used for the screening of military personnel prior to entry into the armed forces.

Subsequently, psychologists have devised tests for numerous variables beyond the initial objectives of screening and diagnosis. Nevertheless, the standard battery usually includes a brief test to rule out organic illness such as the Bender Gestalt test, an I.Q. test to further assess cognitive strengths and weaknesses, and an objective self-report test, the most common of which is the Minnesota Multiphasic Personality Inventory-2 (MMPI-2). Some of the projective tests, such as the Thematic Apperception Test, are based upon theory where it is believed that the individual will project onto ambiguous stimuli his/her conflicts, ideals, wishes and needs. The results of such tests may be of use for objectively measuring, via psychometric means, particular variables, namely depression, anxiety, etc. Interpretations are then synthesized, syndromes identified and diagnoses formulated.

In contrast, psychiatrists have generally utilized case history interviews and a mental status examination to formulate their diagnoses of mental illness. Synthesized, they provide a diagnosis that is frequently consistent with the diagnostic criteria from the DSM-III-R.

Many definitions of dissociation focus on whether an individual's awareness or consciousness, sense of identity and/or behavior impair that individual's functioning. In recent times, impairment of an individual's academic, occupational and/or social functioning has been the criterion in defining dissociation as abnormal. West (1967) defined dissociative reaction as a "state of experience or behavior wherein dissociation produces a

discernable alteration in a person's thoughts, feelings or actions so that, for a period of time, certain information is not associated or integrated with other information as it normally or logically would be" (West, p. 890).

A disturbance of identity and amnesia can best characterize most forms of pathological dissociation. Included in certain types of amnesia is an alteration of self and environment (as it occurs in psychogenic amnesia or fugue states). Disturbance in memory can range from forgetfulness associated with alcohol and drug ingestion to functional forgetfulness. Amnesia and identity disturbance are predominately used by the authors of DSM-III and DSM-III-R in categorizing individuals with dissociative disorders. In the soon to be released DSM-IV, multiple personality disorder may be defined as "dissociative identity disorder" (DID) (Steinberg, 1993).

Putnam (1985), in his work with combat veterans, commented on a third principle arising in dissociative reactions, namely that most of these disorders are traumatically induced. His research assists in connecting trauma and dissociative reactions by well documented accounts of combat veterans who have experienced amnesia, profound detachment or depersonalized feelings during moments of extreme stress. Such reports have been provided by structured interviews about such experiences.

Many researchers have attempted to use screening instruments and/or psychological tests to identify various psychiatric diagnoses. Also, a number of other investigators have proposed various screening instruments for

establishing appropriate cutpoints for the identification of those individuals experiencing or at risk for mental illness.

Keeping this in mind, professionals in the field of psychology have found it difficult to design tests and measurements which will accurately and reliably diagnose a specific disorder. This is also true for screening instruments for dissociative disorders because there can be an overlap of symptoms in categories of dissociative disorders depending upon the individual's cultural, spiritual and social ideologies, no less the geographical locale in which the individual is being tested.

Colin Ross, utilizing a college population in Manitoba, Canada, found a cutpoint score on the DES above 20 would indicate pathology in his population. Previous research at the University of Arizona, however, suggested 20 to be an underestimate to predict pathology (Angiulo & Kihlstrom, 1991). At the University of Arizona, the DES was administered to 1700 college students during the Spring of 1992, and the result had a mean DES score of approximately 22. Another sample, drawn in the Fall of 1992, yielded a similarly high mean DES score. In these samples, a DES cutpoint of 20 would have identified approximately half of the college population as at risk for dissociative disorder. This higher score may not have been predictive of pathology because of normal developmental changes as adolescents transition to young adulthood (Angiulo & Kihlstrom, 1991).

Following is a brief discussion of various screening instruments, their purpose and validity in screening for dissociative disorders.

Dissociative Experiences Scale

The DES is a self-report instrument which includes 28 questions where subjects are asked to make slashes on a 100 mm line to indicate where they fall on a continuum for each question. The scale score ranges from zero to 100 and is called the DES score. Bernstein and Putnam (1986) have demonstrated reliability testing using both test/re-test and split half methods and showed significant correlations demonstrating good internal consistency. The authors also demonstrated evidence of the DES's criterion-referenced validity with the subjects.

Little is known about the distribution of DES scores in the population at large, the internal structure of the scales, the relations between them, or their comparative validity in identifying individuals with (or prone to) dissociative psychopathology. In current practice, scores on the DES are reported in terms of the average percentage rating given to each item. For example, if a subject endorsed an experience as having occurred 50% of the time on each question of the DES, he or she would receive a score of 50. These percentage scores may be calculated by dividing the total DES score by 28, yielding a scale of zero to 100. Angiulo and Kihlstrom (1991) found that the mean percentage score for DES was 22.40 (SD = 12.73), with a median of 20.36. Percentage score equivalent to salient decile cutpoints were: 80th percentile, 32.50; 90th

percentile, 40.36; 95th percentile, 45.00 and 99th percentile, 57.43. This study utilized the DES to identifying individuals at risk for dissociative disorders examining various cutpoints between 20 and 30.

A factor analysis by Angiulo and Kihlstrom (1991), discussed more fully in Chapter 4, yielded five factors: Factor 1 - blackout and disorientation; Factor 2 - tapped experiences of depersonalization and derealization; Factor 3 - daydreaming and fantasy; Factor 4 - trance-like states; and Factor 5 - positive emotional involvement in nature and language.

Tellegen Absorption Scale

The Tellegen Absorption Scale (TAS) (Tellegen & Atkinson, 1974) is a self-report instrument. Although not intended as a clinical screening instrument or even as an assessment of dissociation per se, the TAS is designed to sample absorbing and self-altering experiences, including dissociative experiences, in the normal population. Exploratory factor analyses by Angiulo and Kihlstrom (1991) obtained five factors which accounted for almost half of the variance. Factor 1 included synesthesia and other items involving absorption and involvement in sensory and perceptual experiences. Factor 2 tapped experiences of intuition and insight. Factor 3 involved various sorts of imaginative involvements, and Factor 4 involved various trance states or mystical experiences. Factor 5 entailed positive emotional involvement in nature and language. When analyzed, these results were in substantial agreement with the findings of the Tellegen (1987; see also Glisky, Tataryn,

Tobias, Kihlstrom & McConkey, 1991; Tellegen, 1981) who identified six related factors -- responsiveness to engaging stimuli, synesthesia, enhanced cognition, enhanced awareness, vivid reminiscence and oblivious/dissociative involvement -- in their large sample of college students.

Perceptual Alteration Scale

The Perceptual Alteration Scale (PAS) (Sanders, 1986) is a self-report scale. Its items appear innocuous and question relatively normal life experiences. Data are lacking for the PAS in clinical out-patient and in-patient populations. Nor are there any published factor analyses of the structure of the PAS in a normal population.

Dissociative Disorders Interview Schedule

The Dissociative Disorders Interview Schedule (DDIS) (Ross, Heber, Norton & Anderson, 1989a) is considered a 131-item structured interview used to diagnose all of the dissociative disorders, in addition to somatization disorders, major depressive episodes and borderline personality disorder. It also inquires about the history of substance abuse, childhood physical and sexual abuse, history of sleep walking, entering trance states, having imaginary playmates, Schneiderian first ranked symptoms of schizophrenia, extra sensory experiences and sixteen secondary features of multiple personality disorder. This instrument has an inter-rater reliability of .76 and accurately identifies multiple personality disorder 90% of the time.

Questionnaire of Experiences of Dissociation

The QED is a self-report questionnaire, containing 41 questions. The QED was developed utilizing items from clinical literature which described experiences told by patients classified as having both an organic disorder and various functional dissociative disorders. Considering its good reliability and good validity, it might be considered as an alternate assessment technique in dissociative research. In examining the QED and the DES, Angiulo and Kihlstrom (1991) found a strong relation between the two instruments. The mean QED percentage score was 23.03 (SD = 13.32), with a median of 20.77. The distribution of scores was sharply skewed toward the low end of the continuum. Analyses revealed four factors: Factor 1 related to items described as forms of blackouts and disorientation (e.g., "My mind has gone blank on me"); Factor 2 - items related to experiences of depersonalization and derealization (e.g., "I often wonder who I really am"); Factor 3 related to daydreaming and fantasy (e.g., "I daydream often"); Factor 4 involved trance-like states (e.g., "I have sometimes gone into a trance, like hypnosis"). Thus, the relations between the DES, QED and TAS were very strong. This is especially so with the DES and QED and might even substitute for each other (Riley, 1988). A correlation factor of $r = .91$, for these two measures almost matched their internal consistency.

Although the internal structure of the QED has yet to be analyzed, the factor analytic findings emphasize that the DES and the QED both may be

contaminated with items tapping experiences of absorption, in addition to pathological experiences of dissociation (Angiulo & Kihlstrom, 1991).

Structured Clinical Interview for DSM-IV Dissociative Disorders

Recently published, the Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D; Steinberg, 1993) is a semi-structured clinical interview that has been in development since 1985. Its function is to differentiate a diagnoses of the dissociative disorders using the new criteria proposed by DSM-IV.

In Steinberg's attempt to shorten her instrument, she designed the Mini-Structured Interview for dissociative disorder (Mini-SCID-D). Steinberg prepared it in two formats: (1) a self-administered version that uses a Likert type of scaling, and (2) a clinician version which is the criterion related instrument used in this study (Mini-SCID-D). The Mini-SCID-D is a semi-structured interview.

As stated above, semi-structured interview questionnaires include the SCID-D (Steinberg, et al., 1987), the Mini SCID-D Self-Administered (Mini-SCID-D SA), and the Mini SCID-D Clinician Version. Steinberg, et al. (1988), feel that the SCID-D is a diagnostic tool. A limitation of the SCID-D is that it requires training to administer and uses clinical judgments on the part of the interviewer for scoring. The SCID-D includes operationalized questions, yet it also allows for maximum flexibility. If the screening questions are answered negatively, specific follow-up sections of the SCID-D are not pursued. If,

however, the screening questions are answered positively and the responses seem clinically significant, the interviewer is to pursue further questioning. The SCID-D contains two types of questions. The first type asks about the presence or absence of symptoms in a direct manner. Other questions are worded in an indirect manner. The SCID-D allows the interviewer to record inconsistencies in the subject's responses and to include these inconsistent responses in the overall scoring of the instrument. Steinberg, et al. (1988), has emphasized that there may be subtle indicators of underlying dissociative pathology which may not be identified except by her method, namely, a semi-structured clinical interview. This is in contrast to Ross' (1989) suggestion that the administrations of such interviews is laborious, time intensive and difficult to learn.

The Mini-SCID-D SA has items which focus mostly on pathological symptoms of dissociation. It focuses on more pathological signs and symptoms than the TAS and the QED. It also considers whether such symptoms are alcohol and/or drug related.

Both abbreviated versions of the SCID-D are similar in their semi-structured format to the full SCID-D. They incorporate approximately three to four questions of each of Steinberg's five dissociative symptoms, with some follow-up questions at the end, also noting the frequency of occurrence.

CHAPTER 3

METHODS AND PROCEDURES

This study was concerned with the establishment of appropriate cutpoints for the identification of late adolescents and young adults who may have experienced or might have been at risk for dissociative disorders.

As noted in Chapter 2, a number of researchers have entertained a series of screening instruments for the diagnosis of dissociative disorders, of which the most commonly used has been the DES. In Bernstein and Putman's (1986) original paper, it was reported that a group of 10 individuals with Post-Traumatic Stress Disorder showed a median score of 31.25 (out of a possible 100 points), while 20 individuals with multiple personality disorder showed a median score of 57.06; these values were significantly higher than the median of 4.38 derived from a group of 31 college students. However, it should be noted that the ranges around the individual means were very large. Moreover, the median score for the college student sample was probably low. Subsequent research by Ross and his colleagues obtained a median score of 7.0 for a random sample of the population of Winnipeg, Manitoba, with medians of 17.7 and 7.9 for Winnepeg adolescents and college students, respectively (Ross, Joshi & Currie, 1991). Ensink and van Otterloo (1989) reported a median score of 16.3 for Dutch college students. Frischholz and his colleagues reported a median of 22.9 for a sample of 259 United States college students.

Research Strategy

This study is concerned with five major research questions.

1. How are the dissociative experiences distributed (as measured by the DES) in the college population?

   1.A. Do dissociative experiences reveal sex differences based on subject's total DES scores?

   1.B. What is the frequency of particular dissociative experiences (as measured by the mean score on individual items on the DES)?

2. What is the structure of dissociative experiences in the college population?

3. How does the DES, as a screening instrument, predict scores on a criterion assessment variable of dissociative disorder such as the Mini-SCID-D?

4. What cutpoint on the DES is most useful in identifying individuals who may be at risk for dissociative disorders (sensitivity, specificity, positive predictive value and negative predictive value?

5. What is the relative frequency of the various syndromes of dissociative disorder -- dissociative amnesia, dissociative fugue, dissociative identity disorder, dissociative disorder not otherwise specified and depersonalization disorder -- among those identified by the Mini-SCID-D as "at risk"?

Population and Sample

The population that this study focuses on is 2840 university undergraduate students enrolled in Psychology 101 at the University of Arizona during three semesters, Fall 1992 to Fall 1993. The sex of the subjects were 4:3 ratio favoring females over males. The age of the subjects ranged from 17 to 48.

Measurement of Variables

The major variables in the study are scores derived from the DES and Mini-SCID-D. The dependent variable in the study is the total score students obtained on the Mini-SCID-D, and the independent variable is the score students obtained on the DES.

Dependent Variable

The dependent variable in the study is the total score the students obtained on the Mini-SCID-D. The Mini-SCID-D contains 38 items that was designed as a screening instrument for those who may have dissociative symptoms. It takes 10 to 25 minutes to administer, and a brief time thereafter to score. Considering the Mini-SCID-D is a semi-structured clinical interview, its author (Steinberg, 1985) suggests that the scoring be a combination of both results obtained when a subject endorses the items, as well as taking into consideration the subject's explanations, inconsistencies and behavior to formulate a total score. For each of the five dissociative symptoms outlined by Steinberg (1985), a selection of responses is offered in the scoring manual that

may be easily matched with the data provided during the interview. The first scoring measures either the presence or absence value of the threshold symptom. Then its frequency and subjective report of the experience is recorded. Each of the dissociative symptoms are then rated on a Likert type score of severity (absent - 1, mild -2, moderate -3, and severe - 4), thus permitting a range of scores from five to 20. Steinberg's scoring also is consistent with the *Diagnostic and Statistical Manual-III-Revised*, in that she allowed for scoring to be entered if the subject has a "probable" diagnosis. Each of the five symptoms (dissociative amnesia, depersonalization, derealization, identity confusion and identity alteration) may then be easily graphed and typed into a profile to examine if they conform to previously described syndromes of a dissociative disorder.

Independent Variables

The independent variables in this study are the scores students obtained on the DES. The other independent variables were sex and age. The DES is a 28-item self-report instrument with a test-retest reliability of .84 (Bernstein & Putnam, 1986; Ross, Norton, & Anderson, 1988). The text of the scale provides an operationalized definition of dissociative experiences. Such experiences include feelings of depersonalization and derealization and disturbances in identity, memory, awareness, and cognition.

The scale takes about 10 minutes to complete. Directions on the cover sheet specify that each question applies only to those experiences that are not associated with the use of alcohol or drugs.

Based on the distribution of DES scores, the 2840 subjects in the main study were classified into four categories:

99th percentile and above	Greater than or equal to 46 on the DES,
99th to 95th percentile	Greater than or equal to 31, less than 46 on the DES,
95th to 90th percentile	Greater than or equal to 25, less than 31 on the DES,
Below the 90th percentile	Less than 25 on the DES.

All subjects in the 99th percentile group were invited to return to the laboratory for an interview with the Mini-SCID-D. An equivalent number of subjects from the 95th and 90th percentile groups were also invited. All of these subjects had DES scores above the proposed cutoff of 20. In fact, they all had DES scores above the alternate cutoff of 30 proposed by Bernstein and Putnam (1988). Finally, there were subjects whose DES scores fell below the 90th percentile. Most of these subjects had DES scores below the proposed cutoff of 20.

Sampling Methods and Procedures

This paper examines whether the DES is a valid predictor of risk for dissociative disorder, using the Mini-SCID-D as a criterion variable. The DES was administered in an introductory psychology course as part of a survey

session conducted early in each semester. In return for completing the surveys, the subjects received one credit toward the research participation requirement of the course. The interviewer received a list of names and phone numbers of students who were invited to be subjects in a follow-up interview. The subjects were asked if they were interested and, if they were, further explanation was given to them on the telephone regarding the nature of the research. The interview lasted approximately 15 to 20 minutes. The subjects at times had the option of receiving credit toward their research participation requirement of the course or $3.00 for their participation in the interview.

An appointment time was made at each subject's convenience. A convenient location was used on campus. The office contained a desk and chairs, with few other distractions.

The subjects were asked to read and sign a consent form, and were told this research was concerned with various aspects of memory and identity in college students. With the subjects' permission, the interview session was audio tape recorded.

At the end of the Mini-SCID-D, the subjects were asked if they had any questions, comments or concerns, all of which were answered in an open and honest fashion and usually pertained to the nature of the study. The subjects were then paid either by research credit or in cash, and they signed a receipt for whatever choice they made.

Each Mini-SCID-D was then scored according to Steinberg's guidelines.

Analytical Methods

Factor Analysis

An exploratory principal-components analysis was performed on the DES for the population of 2840 subjects. The data were submitted to a varimax rotation.

An additional principal-components analysis was performed, extracting only three factors, in an attempt to confirm the factor structure reported by Ross, Joshi and Currie (1991). The data were submitted to a varimax rotation.

Analysis of Variance of DES Scores By DES Category

The first hypothesis tested the differences between means on the dependent variable, DES, for the independent variable DES category. The purpose of this analysis was to confirm that the four groups did, in fact, differ significantly in terms of DES score.

Means from each of the one-way analysis of variance were submitted to a Scheffe post hoc test to evaluate differences between individual group means. The .1 level significance was employed due to the conservative nature of the Scheffe procedure.

Analysis of Variance of Age and Sex By DES Category

A one-way analysis of variance was utilized to test two hypotheses. The second hypothesis tested the difference between means on age and sex for the independent variable DES category. The purpose of this analysis was to

determine whether the DES subgroups were equivalent with respect to age and sex.

Analysis of Variance of Mini-SCID-D Score by DES Category

The third hypothesis tested the difference between means on the dependent variable, Mini-SCID-D for the independent variable DES category.

Means from each of the one-way analysis of variance were submitted to a Scheffe post hoc test if there were significant findings in the analysis of variance. The .1 level of significance was employed due to the conservative nature of the Scheffe procedure.

Multiple Regression Analysis

A multiple regression analysis was performed in order to determine the validity of the DES in predicting scores on the Mini-SCID-D. The dependent variable was scores on the Mini-SCID-D. Three independent variables were included in the analysis; age, sex and DES scores. The regression analysis employed a stepwise procedure entering age and sex on the first two steps to remove the variation in the Mini-SCID-D scores accounted for by these two variables. These steps determined whether sex and age had any predictive validity. The DES scores were entered into the equation on the third step of the analysis.

Method for the Sensitivity, Specificity, and Predictive Value Analyses

Four indices of validity can be derived from the pattern of true and false positives, and true and false negatives (Murphy, Berwick, Weinstein, Borus,

Budman and Kierman, 1987): Sensitivity (SENS) or the rate at which index cases are correctly identified by the screening instrument; Specificity (SPEC) or the rate at which non-index cases are correctly identified by the screening instrument; Positive Prediction Value (PPV) or the rate at which index cases appear in those identified by the screening instrument; and Negative Prediction Value (NPV) or the rate at which non-index cases appear in those rejected by the screening instrument. These indices may be calculated as follows:

[SENS = TP/(TP + FN)];

[SPEC = TN/(TN + FP)];

[PPV = TP/(TP + FP)]; and

[NPV = TN/(TN + FN)].

CHAPTER 4

ANALYSIS OF THE PILOT STUDY

Preliminary research yields values comparable to those obtained by Frischholz, et al. (1990). Angiulo and Kihlstrom (1991) examined a sample of 1367 University of Arizona undergraduates in their introductory class in the Fall of 1991. The DES was used as the instrument to assess dissociative tendencies. The DES was slightly modified with regard to its wording and scoring. Previously, the DES relied on a 10 cm visual analog scale for each question to be scored to the nearest 5 cm. All of the items of the DES were worded positively.

An exploratory principal components analysis yielded five factors accounting for nearly 50% of the variance, which were subjected to orthogonal rotation by the varimax method. They were Factor 1 which included items having to do with absorption; Factor 2 tapped experiences of depersonalization and derealization; Factor 3 involved incidents of blackout; Factor 4 had to do with transcendence of normal voluntary capacity; and Factor 5 also involved fairly profound lapses of memory.

The mean percentage score for the DES was 22.40 (SD = 12.73), with a median of 20.36. Cutpoints equivalent to salient decile cutpoints were: 80th percentile - 32.50; 90th percentile - 40.36; 95th percentile - 45.00 and 99th percentile - 57.32. The reliability of the DES, estimated by Carmine's theta, was .92.

Clearly, a very large proportion of subjects in the pilot study had DES scores above the threshold (20) considered to indicate risk for dissociative disorder. It was this observation that led to the main study, concerned with establishing cutpoints that are appropriate for the college population.

CHAPTER 5

ANALYSIS OF THE MAIN STUDY

Factor Analysis

Table 5-1 presents the results of an exploratory factor analysis using varimax rotation. The analysis extracted five factors explaining 46.88% of the variance.

The following factors were identified with items loading .5 or higher on each factor.

Factor 1 - Absorption - This is considered an experience of normal individuals whereupon they can absorb themselves easily into either a movie, a book, ignore pain, etc.

Factor 2 - Derealization - Derealization is a pathognomonic experience whereby the individual has difficulty with boundaries between themselves and their environment and are unable to distinguish them accurately.

Factor 3 - Relates to amnesia for past events.

Factor 4 - Relates closely to Ross' description of dissociative amnesia.

Factor 5 - Relates to experiences of forgetfulness occurring in the present. Dissociative amnesia is believed to be an experience, functional in nature and similar to a repressive defense mechanism which is frequently used by children (and some adults) to "blackout" an uncomfortable or traumatic scene or experience.

Table 5-1. Exploratory factor analysis with varimax rotation extracting five factors.

		Factor				
Item		1	2	3	4	5
14	Remembering past so vividly one seems to be reliving it	.662				
23	Usually difficult things can be done with ease and spontaneity	.644				
18	So involved in a fantasy that it seems real	.594				.273
19	Able to ignore pain	.590				
17	Absorption in television program or movie	.544				.328
13	Feelings as though one's body is not one's own		.704			
11	Not recognizing one's reflection in a mirror		.666			
12	Other people and objects do not seem real	.262	.624			
28	Looking at the world through a fog		.581	.386		
26	Finding notes or drawings that one must have done but doesn't remember doing			.666	.319	
25	Finding evidence of having done things one can't remember doing			.656	.313	
24	Not sure whether one has done something or only thought about it	.332		.570		.328
5	Finding unfamiliar things among one's belongings			.343	.638	
4	Finding oneself dressed in clothes one can't remember putting on				.637	
3	Finding oneself in a place but unaware how one got there				.529	.460
2	Missing part of a conversation					.689
1	Driving a car and realizing one doesn't remember what happened during the trip					.659
15	Not sure if remembered event happened or was a dream	.449				.402
6	Being approached by people one doesn't know who call one by a different name	.389			.484	
20	Staring into space	.326		.352		.266
21	Talking out loud to oneself when alone	.395		.379		

22	Feeling as though one were two different people	.431	.411	.374		
16	Being in a familiar place but finding it unfamiliar	.348	.383			
8	Not recognizing friends or family members		.326		.489	
7	Seeing oneself as if looking at another person	.306	.313		.412	
10	Being accused of lying when one is telling the truth					
27	Hearing voices inside one's head	.354	.376	.395		
9	Not remembering important events in one's life		.470			

Table 5-2 presents the results of a factor analysis using varimax rotation. These results produced similar definitions of Ross' three factors (Ross, Joshi & Currie (1991)). The factors are as follows: Factor 1 - absorption; Factor 2 - derealization and, finally, Factor 3 - dissociative amnesia.

Table 5-2 Factor analysis with varimax rotation extracting three factors.

	Factor		
Item	1	2	3
23 Usually difficult things can be done with ease and spontaneity	.650		
18 So involved in a fantasy that it seems real	.646		
14 Remembering past so vividly one seems to be reliving it	.624		
17 Absorption in television program or movie	.621		
15 Not sure if remembered event happened or was a dream	.577	.281	
24 Not sure whether one has done something or only thought about it	.562	.416	
22 Feeling as though one were two different people	.560		.401
3 Finding oneself in a place but unaware how one got there		.671	
5 Finding unfamiliar things among one's belongings		.649	
4 Finding oneself dressed in clothes one can't remember putting on		.619	
25 Finding evidence of having done things one can't remember doing	.396	.54 7	
13 Feelings as though one's body is not one's own			.719
11 Not recognizing one's reflection in a mirror			.650
12 Other people and objects do not seem real	.348		.596
28 Looking at the world through a fog	.299		.571
16 Being in a familiar place but finding it unfamiliar	.419	.316	.391
10 Being accused of lying when one is telling the truth		.260	
2 Missing part of a conversation	.419	.437	
19 Able to ignore pain	.485		
20 Staring into space	.470	.268	
21 Talking out loud to oneself when alone	.493		

7	Seeing oneself as if looking at another person			.415
1	Driving a car and realizing one doesn't remember what happened during the trip	.258	.486	
6	Being approached by people one doesn't know who call one by a different name	.309	.423	
8	Not recognizing friends or family members		.424	.394
26	Finding notes or drawings that one must have done but doesn't remember doing	.256	.488	
27	Hearing voices inside one's head	.448		.397
9	Not remembering important events in one's life		.347	.460

Analysis of Variance

The following Table 5-3 compared mean scores of age for levels of the DES category (99th percentile and above, 99th to the 95th percentile, 95th to the 90th and below the 90th percentile). Results of the F test of mean differences between the four levels of DES category was not significant for age ($F = 2.30$ $df = 3/75$, $p = .12$).

Table 5-3 compared also mean scores of the Mini-SCID-D scores for four levels of the DES category (99th percentile and above, 99th to the 95th percentile, 95th to the 90th percentile and below the 90th percentile. Results of F of mean differences between the four levels of DES category was significant for the Mini-SCID-D scores ($F = 6.66$, $df = 3/75$, $p < .001$). A Scheffe post hoc procedure showed that the mean for subjects in the 90th percentile and below was significantly different than the mean for subjects in the other three groups ($p = < .1$). An inspection of the means showed that the Mini-SCID-D scores for the 90th percentile and below were significantly lower than each of the other three means.

Table 5-3. Mean Scores for Age and Mini-SCID-D Score by DES Category and F Test for Levels of DES Category.

DES Category	n	Age	Mini-SCID-D
Total Sample	79		
M		18.85	11.05
SD		2.58	4.08
99th percentile and above	13		
M		18.85	12.92
SD		1.52	4.61
99th to the 95th percentile	15		
M		19.13	12.47
SD		1.85	4.69
95th to the 90th percentile	13		
M		20.23	13.15
SD		5.53	2.79
Below the 90th percentile	38		
M		18.26	9.13
SD		1.03	3.16
F		2.03	6.66
p		.12	.00

Generally speaking, the means between this investigator's main study and Ross' study are close as presented in Table 5-4. That is, the high means of the present study seem to be ones that have a high tendency of those of Ross' and, similarly, low means of this study has a tendency toward low means of Ross' study.

When you view Table 5-5 below, you will notice the item correlation between each item and the total DES score. All correlations are less than the Ross study.

Table 5-4 Comparison of Means and Standard Deviations of Items in the DES for the Main Study (N = 2480) and with Ross, Joshi & Currie (1991).

		Pilot Study		Ross et. al.	
Item		M	SD	M	SD
23	Usually difficult things can be done with ease and spontaneity	21.1	24.9	22.8	24.0
18	So involved in a fantasy that it seems real	23.6	25.2	10.0	18.5
14	Remembering past so vividly one seems to be reliving it	10.1	22.4	17.4	23.7
17	Absorption in television program or movie	24.1	24.7	20.2	25.5
15	Not sure if remembered event happened or was a dream	20.7	21.0	12.6	19.8
24	Not sure whether one has done something or only thought about it	19.5	21.9	21.2	23.1
22	Feeling as though one were two different people	15.3	22.4	11.5	18.9
3	Finding oneself in a place but unaware how one got there	4.2	10.3	2.8	9.6
5	Finding unfamiliar things among one's belongings	4.6	10.6	4.5	13.7
4	Finding oneself dressed in clothes one can't remember putting on	1.3	5.8	1.9	8.5
25	Finding evidence of having done things one can't remember doing	10.1	16.1	13.5	19.2
13	Feelings as though one's body is not one's own	3.4	10.2	3.9	11.0
11	Not recognizing one's reflection in a mirror	2.6	8.9	1.8	7.2
12	Other people and objects do not seem real	7.2	14.0	4.9	13.5
28	Looking at the world through a fog	4.4	11.6	4.7	12.6
16	Being in a familiar place but finding it unfamiliar	9.3	15.1	8.6	16.6
10	Being accused of lying when one is telling the truth	10.1	22.4	7.3	14.6
2	Missing part of a conversation	33.6	22.2	24.3	22.1
19	Able to ignore pain	21.1	24.9	25.6	26.8
20	Staring into space	20.4	32.1	15.3	20.5
21	Talking out loud to oneself when alone	19.6	24.2	15.2	21.9
7	Seeing oneself as if looking at another person	5.5	20.9	5.3	12.9
1	Driving a car and realizing one doesn't remember what happened during the trip	15.2	19.3	9.0	15.7
6	Being approached by people one doesn't know who call one by a different name	9.5	16.5	12.4	19.6
8	Not recognizing friends or family members	2.2	8.0	5.1	14.0
26	Finding notes or drawings that one must have done but doesn't remember doing	5.9	12.9	6.7	14.7

27 Hearing voices inside one's head	9.7	20.5	5.3	14.6
9 Not remembering important events in one's life	4.3	12.0	8.8	17.9

Table 5-5. Comparison of correlations of items in the DES with overall DES Score for the Main Study (n = 2480) and Ross, Joshi & Currie (1991).

Item		Main Study	Ross et. al.
23	Usually difficult things can be done with ease and spontaneity	.35	.66
18	So involved in a fantasy that it seems real	.44	.66
14	Remembering past so vividly one seems to be reliving it	.33	.68
17	Absorption in television program or movie	.31	.59
15	Not sure if remembered event happened or was a dream	.41	.75
24	Not sure whether one has done something or only thought about it	.49	.66
22	Feeling as though one were two different people	.41	.52
3	Finding oneself in a place but unaware how one got there	.35	.52
5	Finding unfamiliar things among one's belongings	.29	.56
4	Finding oneself dressed in clothes one can't remember putting on	.28	.41
25	Finding evidence of having done things one can't remember doing	.45	.65
13	Feelings as though one's body is not one's own	.37	.50
11	Not recognizing one's reflection in a mirror	.29	.45
12	Other people and objects do not seem real	.43	.63
28	Looking at the world through a fog	.35	.57
16	Being in a familiar place but finding it unfamiliar	.40	.72
10	Being accused of lying when one is telling the truth	.12	.60
2	Missing part of a conversation	.33	.58
19	Able to ignore pain	.19	.52
20	Staring into space	.24	.66
21	Talking out loud to oneself when alone	.24	.48
7	Seeing oneself as if looking at another person	.11	.49
1	Driving a car and realizing one doesn't remember what happened during the trip	.29	.37
6	Being approached by people one doesn't know who call one by a different name	.27	.62
8	Not recognizing friends or family members	.24	.61
26	Finding notes or drawings that one must have done but doesn't remember doing	.33	.59
27	Hearing voices inside one's head	.29	.57

9	Not remembering important events in one's life	.23	.57

Regression Analysis

Ordinarily, stepwise regression would enter DES scores first, because DES is most highly correlated with Mini-SCID-D scores. In the present analysis, however, age and sex were entered first.

Multiple regression analysis was applied to the dependent variable (Mini-SCID-D). The independent variables were entered stepwise into the analysis as follows:

Step 1

Age

Step 2

Sex (an indicator variable was used, Male = 0 and Female = 1)

Step 3

DES score

The observed multiple correlation for the dependent variable Mini-SCID-D for the first two steps is .27 and does not represent a significant relationship between the independent variables and the dependent variable ($F = 1.71$, $df = 2/76$, $p = .19$).

The observed multiple correlation for dependent variable Mini-SCID-D for the third step was .47, which represented a significant relationship between the independent variables and the dependent variable ($F = 7.25$, $df = 2/76$, $p < .001$). This relationship indicated that 22% of the variation in Mini-SCID-D was

explained by the independent variables (age, sex and DES score). The prediction equation for Mini-SCID-D scores was:

$$\text{Mini-SCID-D} = 12.44 - .18\,(\text{Age}) - 1.58\,(\text{Sex}) + .11\,(\text{DES})$$

The regression coefficient for age was not significant ($t = -1.10$, $p = .27$), indicating that age had no predictive value for estimating Mini-SCID-D scores. The regression coefficient for sex was not significant for $p < .05$; however, there was a trend toward a sex difference ($t = -1.91$, $p < .1$). The regression coefficient for DES score was significant ($t = 4.20$, $p < .001$), indicating that it was the only significant predictor and, therefore, should be the only predictor of the Mini-SCID-D scores.

Sensitivity, Specificity and Predictive Value Analysis

Results of the sensitivity, specificity, and predictive value analysis are presented in Table 5-6. Cross-tabulations are produced for nine different cutpoints ranging from a score of 15 on the DES to 46. The 90th percentile is represented by a cutpoint of 25, the 95th percentile by a cutpoint of 31, and the 99th percentile by a DES cutpoint of 46. An inspection of the results indicates that sensitivity is highest (83.8%) at the lowest cutpoint (less than 15) and lowest (24.3%) at the highest DES cutpoint (less than 46). The reverse is true for specificity. Similarly, there is an inverse relationship between positive predictive value and negative predictive value.

Table 5-6. Screening indexes for DES (N = 79).

	Percent			
Index	SENS	SPEC	+PV	-PV
DES less than 15	83.8	52.4	60.8	78.6
DES less than 20	75.7	61.9	63.6	74.3
DES less than 21	73.0	61.9	62.8	72.2
DES less than 22	73.0	61.9	62.8	72.2
DES less than 23	73.0	61.9	62.8	72.2
DES less than 24	73.0	64.3	64.3	73.0
DES less than 25 (90th %tile)	73.0	66.7	65.9	73.7
DES less than 26	70.3	66.7	65.0	71.8
DES less than 27	67.6	66.7	64.1	70.0
DES less than 28	59.5	69.0	62.9	65.9
DES less than 29	54.1	71.4	62.5	63.8
DES less than 30	54.1	73.8	64.5	64.6
DES less than 31 (95th %tile)	48.6	76.2	64.3	62.7
DES less than 35	37.8	83.3	66.7	60.3
DES less than 40	27.0	85.7	62.5	57.1
DES less than 45	24.3	90.5	69.2	57.6
DES less than 46 (99th %tile)	24.3	90.5	69.2	57.6

Dissociative Psychopathology In A College Population

Of the 79 subjects, those who scored greater than or equal to 12 on the Mini-SCID-D totalled 41.

The Mini-SCID-D profiles were clinically reviewed, and of the 79 subjects, three received a tentative diagnosis of dissociative amnesia, none of the subjects received a tentative diagnosis of dissociative fugue, four students received a tentative diagnosis of depersonalization disorder, 11 received a tentative diagnosis of dissociative disorder not otherwise specified and, finally, one student received a tentative diagnosis of multiple personality disorder. Table 5-7 represents the frequency distribution of diagnostic categories on the Mini-SCID-D. The distribution was assessed by this investigator solely by the subjects' Mini-SCID-D scores, presentation and behavior and believed to have had experiences that matched Steinberg's, et al. (1990)., criterion.

Table 5-7. Frequency Distribution of Diagnostic Categories on the Mini-SCID-D.

	Number	Percentage
Absent (0)	46	58.23
Psychogenic Amnesia (1)	5	6.33
Psychogenic Fugue (2)	0	0.00
Depersonalization (3)	8	10.13
DD NOS (4)	3	3.80
MPD (5)	17	21.51
Total	79	100.01

CHAPTER 6

FINAL DISCUSSION

Discussion of Pilot Study Findings

Looking at the DES data from the pilot study at the University of Arizona, a cutpoint of 20 was clearly inappropriate because it identified 51.4% of the students who were at risk for dissociative disorders.

A number of factors seemed to be at work here. In the first place, it is well known that adolescents and young adults are more likely to score in the "pathological" range on such inventories as the MMPI as compared to older adults, even in the absence of psychopathology. Since 1947, a large group of adolescents in Minnesota have obtained higher scores than the adult standardized sample on some of the MMPI clinical scales. The authors suggest that this might be "suggestive of the turmoil and instability" which such individuals experience during this phase of life (Ball, 1962); see also Hathaway & Monachesi (1963); Baughman & Dahlstrom (1968); Marks, Seeman & Haller (1974)). These authors state even more emphatically that "it is unlikely" that such high scores are an indication of more frequent psychopathology in adolescents, "given that the results of studies that have found only a slightly higher prevalence rate of psychiatric disorders in adolescents compared with middle childhood" (Rutter, Graham, Chadwick & Yule, 1976). Dissociative experiences may be relatively common in college students, and not necessarily a sign of incipient mental illness. In fact, a

wealth of literature has amassed since the early 1960s indicating that such experiences are endorsed with considerable frequency by college students, most of whom are in good mental health (Roche & McConkey, 1990).

Environmental conditions and methodological issues may further confound the results when contrasting such studies. In the studies by Ross, et al. (1990), and Steinberg, et al. (1991), it was likely that the subjects knew the survey was being conducted by researchers examining various instruments which assessed the subjects' personal feelings and attitudes, and that the purpose of the research was to assess the incidence of various forms of mental illness. Under these circumstances, it seems likely that subjects might be less than candid about their experiences, and reluctant to share them with the investigators.

In the college student surveys, however, the instruments are typically embedded in a host of other questionnaires, and may take on a more benign appearance. Such may explain why students who scored on the pilot study at the University of Arizona when administered the DES in the context of the TAS resulted in scores which were higher than when the DES was administered alone in the main study and, such DES scores were significantly elevated. This may be a result of an acquiescence tendency, thus artificially inflating the scores; or by inducing subject to truthfully endorse experiences that they would not otherwise disclose.

The above lends itself towards considering the importance of the context in which the DES is administered and, furthermore, cultural and geographical issues that might influence such scores. For example, outside of a mental health setting and on a university campus, students are more likely to willingly reveal and acknowledge in a positive direction experiences of dissociation, particularly if such instruments are viewed as benign.

In a previous paper, a search of the literature revealed significant cultural differences of dissociative experiences. This was particularly pronounced when an individual's background, thoughts and behaviors were considered. Moreover, definitions of symptoms around the world had significant differences with even spiritual connotations ascribed to them. Terminology differences, psychodynamic factors and hypnotic susceptibility may change the results of an assessment depending upon the cultural context. Therefore, it is important that an examiner view the results of assessment procedures in the context in which they are administered, so as to avoid making an inaccurate diagnoses of a mental disorder, specifically dissociative disorder (Angiulo, 1992).

Minor modifications to the DES were made in this study. This was believed necessary to prevent confusion on the part of the subjects. The wording and the format of the original DES is unusual compared to other conventional personality questionnaires. In the context of the other scales used, a set of items all belonging with the phrase "some people have the

experience of . . .", and worded in the second person would have been obviously different. The wording of the questions was changed only slightly from the original, and other analyses show that the modified DES did not differ from the original in terms of reliability and factor structure. So, these modifications are probably not sufficient to account for the difference of 15 points or more in the median scores of the student subjects tested at Arizona, compared to Bernstein and Putman's sample. Accordingly, the solution to the cutpoint problem is not to revert to the original form of the DES, but to determine appropriate cutpoints for use under the present conditions of survey administration.

Many subjects scored above the DES cutpoint of 20 in the pilot study in comparison to the main study, which was significantly lower. This is likely so because, in the pilot study, as noted earlier, the DES instrument was imbedded in other psychological instruments, namely, the TAS and the QED which look more innocuous and may have led the students to endorse more items on the DES, believing that it was "okay" to repeat these experience. Furthermore, the subjects were administered these instruments in a group setting.

Figure 1 illustrates graphically the distribution of the DES scores among the three studies, pilot, main and Ross' study. The main study and Ross' study appear similar. The distribution of DES scores in the pilot study diverged greatly (mean = 22.40, SD = 12.73) from both Ross' Manitoba

sample (mean = 10.8, median = 7.0), and the main study of the present investigation (mean = 12.55, SD = 9.644). By contrast, the main study was more closely comparable to Ross' findings.

Figure 1 - Graphic Illustration of the Distribution of the DES Scores Among the Three Studies

This investigator's pilot study and main study t tests for independent means were considered highly significant when using a degree of freedom of 3860. This yielded a t value of 25.33.

In comparison, the t tests of differences between this investigator's pilot study and Ross' study yielded 25.06, df = 2420, also highly significant.

A test of the difference between Ross's study and this investigator's main study yielded a t value of 4.99, again using degrees of freedom of 3860. This is also significant, though the difference is substantially reduced. This suggests that, even though the above explanations may have inflated the investigator's pilot study subjects' scores, the statistics reveal that 17.3% of the subjects in this investigator's main study were identified as "at risk" for dissociative disorders in comparison to Ross' study. Simply, this investigator's DES scores are greater than Ross', and so the original purpose of the study remains valid.

The form of the DES used in the pilot study and the main study contained minor differences. The DES study used in the pilot study had items which were rewritten in the "first" person. In the sample of students tested in the Fall of 1992 (the main study), the "first" person version was also used. However, for the Spring 1993 and Fall 1993 samples, the original DES "second" person version was used. The differences between the "second" and "first" person wording makes no difference statistically to

the score, and future revisions of the paper by Angiulo and Kihlstrom (1991) will demonstrate this. For the Fall 1992, subjects' mean DES score was 12.69 (n = 1382; SD = 9.64). Subjects continuing to be examined in the Fall of 1993 total 837 presently, and more data is expected after data entry is completed. The mean DES scores for these individuals were 12 and the SD was 10. That yields a t value of 1.67 and degrees of freedom equaling 2217. This is not near the statistical level of significance of even $p < .05$.

The wording of the DES does not appear to affect anecdotally this investigator's experience in hospital settings. However, it was noted that some individuals preferred the 100 mm visual analog scale versus the 11-point Likert type scale, feeling they were uncertain as to which category to circle. It was interesting that some of the subjects returned the instrument to this investigator and used either different colored pens to denote different ages in their lifetime as to when these experiences occurred or used a range of numbers for the "worst part of my life". Therefore, as a researcher and as a clinician, this investigator believes that neither the precise wording nor the precise scaling of DES interfere with the internal structure of the DES.

The significant difference between the main study and the pilot study was the context in which the subjects were administered the instruments. That is, at times it was mixed in with the Riley QED and Tellegen TAS and at other times the TAS was absent (as in the main study). In the latter part of 1992, the DES was administered with the Mini-SCID-D in contrast to the

present semester and the previous semester where they were presented alone. This demonstrates that further that mixing the DES items with the SCID-D did not have a significant difference on the DES scores. The statistical analyses presented above, the Fall of 1992 (DES with Mini-SCID-D) and the Fall of 1993 (DES alone) demonstrated this point.

The TAS appears to be the predominant cause for the difference in effect. This may have occurred in a number of ways. For example, the DES, the Mini-SCID-D, the TAS and QED are all worded positively, so it is possible that some students' responses were contaminated by an acquiescence tendency in their testing set (that is, a tendency to endorse an item regardless of its content in order to please the investigator). In the pilot study, the DES items were mixed with the TAS items and the QED items. This may have further increased an acquiescence tendency; that is, students endorsing many of the DES items merely because it became "habitual" after endorsing TAS and QED items. This acquiescence tendency may have been reduced in the main study for the number of items that are acquiescent in nature is reduced significantly. The tendency may have even been further reduced to zero; that is, no mixed items at all in the previous two semesters. However, there is something puzzling here in that the statistical comparison between the Fall of 1992 and the Fall of 1993 shows that the mean DES scores were not significantly different in the two samples, despite the difference in the mixing of the items. The difference, therefore, may be in

the "normalizing" influence of the TAS as noted above. The factor analysis shown earlier demonstrate that the DES contains items similar to "normal" experiences of absorption as well as items of "pathological" experiences of amnesia and derealization. In contrast, the items on the TAS almost all include "normal" absorption items. Therefore, it is possible that the TAS made the DES items appear in the most benign manner and, thus, the students truthfully responded to them as such. Another way to look at this is that, when the DES items are presented alone (in the Spring of 1993 and Fall of 1993) or in combination with another "abnormal" experience scale as the Mini-SCID-D, subjects are hesitant to self-disclose their own experiences for fear of appearing sick. This is not unlike the faking good scales on the MMPI and MMPI-2. Remember, when the DES items are given in combination with items related to normal experiences, a fear and/or anxiety may be lessened such that subjects in reports from them would correspond more closely to their actual experiences.

In the main study, the fact remains that subjects endorsed more such experiences than Ross' subjects. Therefore, this investigator's research question remains legitimate; that is, is the convention DES cutpoint score of 20 the best for identifying individuals who are at risk for dissociative disorders?

Using the DES as a measure to screen for dissociative disorders as measured on the Mini-SCID-D appears to have a statistical predictive

significance as determined by the regression analysis. The lowest Mini-SCID-D scores are observed among subjects who scored lowest on the DES. The subjects who scored above the 99th percentile had an observed mean of 12.92 which was significantly higher than the group below the 90th percentile, with a mean of 9.13. Further, the group in the 95th to the 99th percentile on the DES with a mean of 13.15 were significantly higher than the group below the 90th percentile. There was no observed differences in the three higher groups, however, which leads to the conclusion that the DES does not discriminate among different pathologies as measured by the Mini-SCID-D.

The Mini-SCID-D and the DES seem to be operating in a similar fashion. The results show that the DES functions well to distinguish between individuals with pathology and those with absent manifestations. Further work would be best directed to ward making distinctions among individuals within the three groups of pathology now that it is clear the DES is a useful screening instrument.

As noted in Chapter 2, Steinberg, et al., have developed the SCID-D which is designed to yield the required diagnosis, as correct. In this study, the presence or absence of a dissociative disorder may serve as the criterion against which the DES will be evaluated. The extent of any possible mental illness in a college student population is unknown. However, in light of the age, intellectual capacity, level of achievement, etc., it is likely that most of

these subjects may be free from any form of mental illness which would impair their functioning. Accordingly, some other way must be found to ascertain the sensitivity and specificity of the modified DES in this population.

The correlational data presented above indicates that the DES and the Mini-SCID-D identify nearly overlapping groups of subjects who are at risk for dissociative disorders. However, the DES has already been established across many laboratories and clinics as the screening instrument of choice for dissociative disorders. Conceivably the Mini-SCID-D could replace the DES, but not before it has been further refined, and more is known about its psychometric properties. Accordingly, the proposed study will focus on the DES as a screening instrument for these syndromes.

Accordingly, the proposed study has focused on the DES as a screening instrument for these syndromes.

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