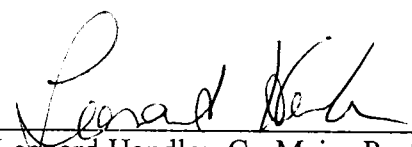
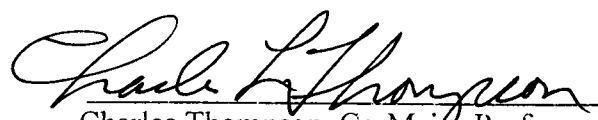


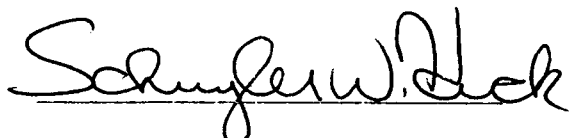
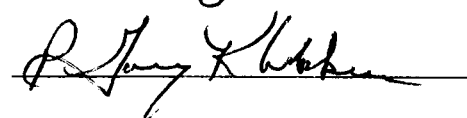
To the Graduate Council:

We are submitting herewith a dissertation written by Elizabeth Anne McKee entitled "MMPI-2 Studies of Posttraumatic Adjustment following Physical or Sexual Abuse". We have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Counseling Psychology.


Leonard Handler, Co-Major Professor


Charles Thompson, Co-Major Professor

We have read this dissertation and
recommend its acceptance:

Accepted for the Council:


Associate Vice Chancellor and
Dean of the Graduate School

**MMPI-2 STUDIES OF POSTTRAUMATIC ADJUSTMENT
FOLLOWING PHYSICAL OR SEXUAL ABUSE**

A Dissertation

Presented for the

Doctor of Philosophy Degree

The University of Tennessee, Knoxville

Elizabeth Anne McKee

August 1999

DEDICATION

I dedicate this work to my husband, Bruce McKee, whose loving support, gentle nature and kind-heartedness have sustained me during difficult times. Our love and commitment to one another deepens with time. I also dedicate this work to my two daughters, Megan and Katie McKee who, like their father, are both gentle, good-hearted people of whom I am very proud and dearly love. I also dedicate this work to my best friend Elizabeth Seabrook, Ph.D., Liz, a sensitive, warm, compassionate individual for whom I have great respect and love as a sister. I also dedicate this work to my mother, Beverly Jean Masters who is a wonderful mother, my life role model and has instilled within me a desire to make a constructive contribution to society. Mom I love you. I also dedicate this work to my sisters and brothers: Cathy Bramer, Stephen Bramer, David Bramer, Richard Bramer, Carolyn Trujillo, and Patty Bramer and their beautiful children. To Carolyn I especially dedicate this work in honor of your perseverance and determination in your growth as a person and mother, as you inspire me to continue to attend to my own growth and development. Lastly, I dedicate this work to Pafoua Yang, M.D., the first Hmong woman doctor, her mother, Mai Yang, and siblings: Pader Yang, Toni Yang, You Pa Yang, Rosie and Johnny Yang. The Yangs, along with many other Hmong people I have had the honor of knowing, provided me inspiration in their transcendence of the traumatic effects of war and resettlement into a foreign land.

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ABSTRACT

The three studies reported upon herein explore the manifestation of posttraumatic effects as expressed on the MMPI-2 F, clinical, Posttraumatic Distress, and Dissociation scales among groups of outpatients who self-report a history of sexual or physical abuse. The first study contrasts the MMPI-2 profiles of female groups reporting physical or sexual abuse, during adult or childhood, with clinical control groups. MANOVAS resulted in significant main effects due to general trauma, adult physical abuse, child sexual abuse, child physical abuse and multiple abuse groups in comparison to clinical control groups. The follow-up univariate F-tests and post hoc Bonferroni tests revealed significant elevation of the Pd, Pa and Sc scales across all the abuse groups in comparison to the clinical control groups; with the exception of the adult physical abuse group that manifested significant elevation of the Pd and Pa, but not the Sc scale. The D, Pt and Ma scales did not exhibit significant elevations among the abuse groups in comparison to the clinical control groups. In subsequent MANCOVA analyses main effects due to general trauma, child sexual, adult physical and multiple abuse were retained when a measure of family relationships, designed for this study was included as a covariate factor. In the related follow-up univariate F or post hoc Bonferroni tests only the Pa scale retained significant effects, independent of the family covariate effects for the general trauma, adult physical and multiple abuse groups. In MANOVA comparisons of female clients reporting emotional abuse only, assault abuse only, or both emotional and assault abuse with non-abused clinical control groups, significant main effects due to abuse were

observed, with significant elevation of the Pd, Pa and Sc scales exhibited solely by the group reporting both emotional abuse and assault. The group reporting assault only exhibited significant elevation of the Pa scale only. In codetype analyses the abuse groups were distinguished by 4-8/8-4, while the non-abused control group was described by a 2-7/7-2 codetype. In the second study, MANOVAS of the clinical scales resulted in significant main effects due to general trauma, and child physical abuse, but not child sexual abuse, in comparison to clinical control groups, among male outpatients. The follow-up univariate F or Kruskal Wallis tests revealed significant elevation of the Pd, Pa and Sc scales for both the general trauma and child physical abuse group in comparison to the clinical control groups, as well as significant elevations of Hs and Hy. The male child physical abuse group also exhibited significant elevations of the D, Pt and Ma scales relative to the clinical control group. In MANCOVA analyses neither the main effects due to trauma or child physical abuse were retained when the family measure was run as a covariate. In MANOVA comparisons of male clients reporting assault only or emotional abuse in addition to assault abuse with non-abused clinical control groups, significant main effects were observed; and only the group reporting both emotional and assault abuse exhibited significant elevation of all three Pd, Pa and Sc scales, in addition to significant elevation of the Hs, D, Hy and Pt scales. The male abused groups were distinguished by various combinations of 4-7/7-4 and 4-8/8-4 codetypes; while the non-abused clinical control were described by a nearly within normal bounds 4-7/7-4 codetype (mean scale scores < 68). Multiple regression equations, incorporating the additional variables of extent of abuse, perpetrator identity, and observation of parental

marital violence, that predicted variance in MMPI-2 clinical scales for males, and family measure ratings for females are also described in the first two studies. In the third study, comparisons of ANOVA tests for the F, Posttraumatic, North Carolina Dissociation Index (NCDI), Phillips Dissociation Scale (PDS), and clinical scales between combined-sex or single-sex abuse groups and clinical controls, revealed that the Pd, Pa and Sc scales more reliably distinguished abused groups than did the other scales. Both the PDS and NCDI distinguished the combined-sex general trauma, child physical and multiple abuse groups; only the PDS distinguished the adult sexual assault combined-sex group. The PDS distinguished the female general trauma and adult sexual abuse groups; the NCDI and PDS both distinguished the male child physical abuse group and the NCDI distinguished the male general trauma group also. Across all three studies the Pd, Pa and Sc scales most reliably distinguished sexually and physically abused female and male outpatients from clinical controls. Neither the NCDI nor PDS dissociation scales appeared to reliably distinguish either child or multiple abuse groups.

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Chapter I

MMPI-2 Studies of Posttraumatic Adjustment Following Physical or Sexual Abuse

Organization of Dissertation

The following work is organized into three independent studies that are written in journal article format contained within chapters II through IV. The three studies are thematically related in that each explores the manifestation of posttraumatic effects on the MMPI-2 profiles of clients who report a history of sexual or physical abuse. The first study explores the MMPI-2 profiles of female outpatients with sexual or physical abuse histories, to determine if clients who report assault traumas can be distinguished from other clinical groups. The second study parallels the first, but investigates the association between abuse history and MMPI-2 profiles among male outpatients, in order to determine if there are gender differences in posttraumatic adjustment. The last study explores the degree to which the MMPI-2 Posttraumatic and Dissociation scales distinguish abused male and female outpatients from other clinical groups. Due to the selective focus of each study, the relevant literature review is contained in the introduction, review and rationale sections of each respective chapter. Additionally, a general literature review, problem statement, related issues and assumptions for each study are articulated below. This organization necessarily entails a certain amount of overlap among the chapters, which is needed to maintain the integrity of each independent study.

General Introduction and Problem Statement

Posttraumatic effects are now recognized as common sequelae to physical and sexual abuse or assault (Briere, 1989; Browne & Finkelhor, 1986; Herman, 1992; Resnick,

Kilpatrick, Dansky, Sauders & Best, 1993). A history of physical or sexual trauma is significantly associated with many disturbances such as: Posttraumatic Stress Disorder (Engel, Engel, Campbell, McFall, Russo & Katon, 1993), Major Depression (Zlotnick, Warshaw, Shea, & Keller, 1997); Anxiety Disorders (Mancinci, Van Ameringen & Macmillan, 1995), Somaticization Disorders (Pribor, Yutzy, Dean & Wetzl, 1993), Eating Disorders (Andrews, 1997), Dissociative Disorders (Putnam, 1989; Ross, 1989), and Borderline Personality Disorder (van der Kolk, Perry & Herman, 1991). The incidence of sexual or physical assault is so common among clients who present with posttraumatic stress symptoms, that the DSM-IV now lists these experiences among possible precipitating factors to developing this complex disorder (American Psychiatric Association, 1994). However, although the MMPI-2 is one of the most commonly used screening and diagnostic instruments in both outpatient and inpatient mental health centers, few studies exist that investigate the manifestation of such posttraumatic effects on this adjustment measure. Therefore, the following three studies collectively are designed to determine how adjustment following sexual or physical abuse may be manifest on the MMPI-2, in order to explore how this assessment instrument may be used in the identification and treatment of clients presenting with posttraumatic distress.

Study 1:

MMPI-2 Profiles of Sexually or Physically Abused Female Outpatients

Related Research and Rationale for Study

Prevalence studies indicate that 40-60% of female outpatients report a history of physical or sexual abuse, and present with heightened distress relative to other patients

(Herman, 1992). The few MMPI studies that do investigate posttraumatic effects of such traumatized female groups report some striking trends. For example, various combinations of elevated Pd (Psychopathic Deviate), Pa (Paranoia), & Sc (Schizophrenia) scales have been found to distinguish sexually abused female clinical groups from non-abused clinical groups, and from non-clinical samples (Goldwater & Duffy, 1990; Gregg & Parks, 1995; Tsai, Feldman-Summers & Edgar, 1979). These scales have also distinguished battered women residing in shelters from both clinical and community samples (Gable & Handler, 1995; Khan, Welch & Zillmer, 1993; Rhodes, 1992; Rosewater, 1988). A significantly elevated Sc scale has also identified adult and adolescent females with an incest history (Scott & Stone, 1986). The combination of the elevated Pd, Pa, and Sc scales across traumatized samples reflects various processes consistent with posttraumatic phenomena including: heightened vigilance, suspiciousness, anger, dysfunctional family relations, perceptions of the world as dangerous, and ego dystonic disturbances in perceptual, sensory and cognitive functions (Courtois, 1988; Herman, 1992; Walker, 1980).

Less consistently, elevations of Hs (Hypochondriasis), D (Depression), Hy (Hysteria), Pt (Psychasthenia), and Ma (Hypomania) have also been reported among these groups (Allen & Coyne, 1995; Bliss, 1984; Gregg & Parks, 1995). The elevated D, Pt and Ma scales may also reflect commonly observed posttraumatic processes such as depressed, tense, anxious or agitated states, ruminations about the past trauma or future possible dangers, and somaticization or conversion symptoms (Herman, 1992). Conversely, the heightened Hy scale may reflect victims' denial of negative feelings, such

as hostility rooted in traumatic experiences.

Investigations of the MMPI-2 validity, supplementary, and content scales have also revealed heightened distress among clients with histories of assault traumas. Significantly elevated F (validity) scales have distinguished sexually abused female outpatients from non-clinical controls (Tsai, Feldman-Summers & Edgar, 1979). Among battered women depressed Es (Ego strength) scales are also observed (Khan, Welch & Zillmer, 1993; Rosewater, 1988). Collectively, these findings are compelling evidence that posttraumatic adjustment may be reflected on particular MMPI scales, specifically F, Pd, Pa, & Sc. Yet, it remains unclear if these same scales might distinguish traumatized clients from other clinical groups, as these scales also reflect psychological disturbances evidenced in a large number of clinical disorders.

Some researchers have proposed that the psychological distress exhibited by adult females presenting with childhood sexual abuse may reflect, in part, early dysfunctional family relations (Fromuth, 1986; Nash, Hulsey, Sexton, Harralson & Lambert, 1993). Nash, et al (1993) found that when a measure of perceived family environment was treated as a covariate with subject's sexual abuse status, significant elevations of various MMPI-2 scales (Pd, Sc, & Si) among the abused group were diminished. However, the main effects of abuse and significant findings for the Pa and Hs scale remained. Brierre & Elliot (1993) observed a similar diminution in posttraumatic distress among sexually abused subjects with a family environment covariate. However, they argue that when the locus of the abuse (within or external to the family) is considered, the effects of the family covariate are most salient for victims who have experienced intrafamilial abuse. This

finding suggests that pathology of family dynamics may vary in concert with particular types of abuses.

Problem Statement

Among the studies that explore the manifestation of posttraumatic processes on the MMPI-2, elevation of the Pd, Pa and Sc scales have been observed among various populations of abused females. Since there are few studies that explore whether these MMPI-2 scales discriminate female clients presenting with an abuse history, experienced at different developmental times, from clinical control groups, it remains unclear if elevation of these scales among abused females reflects posttraumatic processes, or rather, more general psychological distress. In the first study I explored whether groups of sexually and physically abused female clients, who report either adult or childhood victimization, can be differentiated from clinical control groups via particular MMPI-2 profiles, to determine which, if any, specific clinical scales are associated with posttraumatic processes following assault traumas experienced during different developmental periods.

Related Issues and Research Questions

This study was also designed to address several related issues. The accuracy with which the MMPI-2 reflects posttraumatic processes among clients who have a history of physical or sexual trauma is important in insuring that clients are appropriately assessed and diagnosed, and that treatment strategies employed are tailored to specific client concerns. Those studies that do investigate MMPI-2 posttraumatic profiles often fail to use appropriate non-traumatized clinical control groups (Allen & Coyne, 1995; Scott &

Stone, 1986), or appropriate sample sizes (Coons & Sterne, 1986; Solomon, 1983). Thus it is difficult to generalize results to clinical populations, as it is uncertain if the significant findings are attributable to posttraumatic adjustment or are more general indicators of psychological distress. There are also no published MMPI-2 trauma studies that contrast various types of trauma, such as raped versus physically assaulted client groups; nor do there exist any studies that control for developmental effects such as age of victimization on posttraumatic adjustment. The type of trauma experienced, the acuteness or chronic nature of the trauma, and the developmental age at which the trauma is experienced may impact later adjustment in significantly different ways. Thus, this study was designed to explore differences in posttraumatic adjustment between clients who have experienced: multiple versus single traumas, different types of assaults (physical or sexual), and specific adult versus childhood traumas to explore how specific assault experiences and aspects of development at time of victimization may impact posttraumatic distress.

Due to the paucity of MMPI-2 studies that systematically contrast the manifestation of psychological distress between differently traumatized female clients and non-traumatized clinical controls, it is unclear whether elevation of these scales distinguishes posttraumatic distress from more general psychological difficulties or adverse early home environments. In studies that do include clinical controls, the lack of identification of subjects presenting with alternative traumas such as the violent death of a loved one; or who have experienced non-assault family-based traumas such as emotional abuse, may act as a confound to reported findings. These unidentified alternatively or non-assault traumatized subjects may dilute differences between trauma groups and the control

groups as they too may experience posttraumatic distress, and in some cases, adverse family environments. So in study 1, the MMPI-2 profiles of emotionally abused clients and clients reporting other, non-assault, types of trauma were also explored to determine whether the elevation of the Pd, Pa and Sc scales differentiate clients with sexual or physical abuse from emotional abuse or other types of trauma.

Also, there are few studies that have simultaneously explored the impact of trauma and family on posttraumatic adjustment in order to distinguish those lingering effects due to trauma from those resulting from a dysfunctional home environment. The few studies that do explore the relative effects of family dysfunction versus trauma have used analysis of covariance procedures (with family environment measures used as covariate to MMPI-2 posttraumatic scores). This statistical procedure may confound the impact of these variables, as both family environment and abuse, especially in cases of childhood abuse, are highly correlated. An alternative procedure, multiple regression analysis, in which various salient factors related to both abuse and family, such as perpetrator relationship to victim, severity and longevity of the abuse, and family environment may better depict how family factors and abuse factors both impact posttraumatic adjustment. Since many abuses are associated with dysfunctional family environments, the impact of family on posttraumatic adjustment was also explored in study 1 via both multivariate analysis of covariance and multiple regression procedures to explore the relative impact of specific assaults and aversive home environments on posttraumatic adjustment.

Assumptions of Study 1

Incorporated within the design of study one are several assumptions. The first assumption, which also underlies the design of the second and third studies, relates to the issue of the veracity of client self-reports. The studies reported herein are not constructed to address whether or not clients who present with self-reports of physical or sexual assault are factual or prevaricated. What is known clinically, is that clients who do present with such expressed difficulties often exhibit a discernible pattern of complaints that has been termed posttraumatic distress, and is generally attributed to the after-effects of the reported trauma. The author of these studies assumes the position of other trauma researchers that there appears to be no more justification to assume duplicity in cases of client self-reports of abuse than other types of client self-reports, or details of social history, upon which treatment strategies are founded. Among the subjects in this study there was no documentation of lawsuits providing an obvious secondary gain for the clients reporting such experiences. Just as clinicians are often unable to, and not concerned with, verifying clients' reports, but, rather, are focused on treating clients' distresses, so are these studies designed to focus on exploring whether such distress can be reliably distinguished from other psychological distresses on the MMPI-2, with the purpose to further effective detection and treatment strategies of clients presenting with posttraumatic distress.

The study is also not designed to detect clients who may have experienced an assault trauma, but who, for various reasons, have not disclosed these experiences. This is a problem endemic to all trauma studies. Again, although these 'false negative' controls

may dilute possible differences between the identified abused and clinical control groups, it is assumed that among those clients who choose or are able to report abuse histories there exists an associated, distinct clinical syndrome that is distinguishable from other client groups. Although clients who have experienced an undisclosed assault trauma may present with a similar or variant of this syndrome (for instance a numb rather than a reactive phase of posttraumatic distress) it is assumed that inherent in all studies of clinical syndromes there exists some error due to failure of detection. For instance, a clinical study focusing on thought disorders may fail to correctly identify all subjects with paranoid delusions among the thought-disordered group.

Study 2:

MMPI-2 Adjustment of Male Outpatients Presenting with Sexual or Physical Abuse Related Research and Rationale for Study

A difficulty with trauma studies in general, and MMPI studies in particular, is the paucity of studies that explore posttraumatic processes among male clients. In survey studies, 9-16% of male respondents report childhood sexual abuse (Bagley, Wood & Young, 1994; Finkelhor, 1979 & 1984; Finkelhor, Hotaling, Lewis & Smith, 1990); and in a national survey of childhood physical abuse, 65% of parents report hitting sons, with 36% of these cases reflecting severe abuses involving weapons and injuries (Strauss & Donnelly, 1994). Such abuses are correlated with increased depression, anxiety, hostility, paranoid ideation, somaticization, and suicidal behaviors (Collings, 1995; Fromuth & Burkhart, 1989) in male victims. Male outpatients with histories of childhood sexual abuse are also reported to exhibit a high rate of mood disorders, anxiety disorders, and

substance abuse (Schulte, Dinwiddle, Pribor & Yutzy, 1994). In contrast to female victims, many fewer male victims receive a diagnosis of Borderline Personality Disorder or Dissociative Identity Disorder, but are more apt to receive the diagnosis of Antisocial Personality Disorder (Schulte, et al., 1994).

In contrast to the larger body of MMPI-2 trauma research detailing posttraumatic effects among female mental health clients, relatively little has been published about male clients. Two MMPI studies that document the existence of abuse histories in male patients with dissociative disorders are based upon small male inpatient sample sizes of less than 10, mixed in with larger female samples (Bliss, 1984; Coons, Bowman & Milstein, 1988), thus clouding any possible gender differences of posttraumatic adjustment on MMPI scales. Several researchers have noted that the abuse experiences of males and females differ in several important ways. Finkelhor (1979, 1984), citing data from a survey of college students and parents, reports that the sexual abuse of males differs from females in that, on average, male victims tend to be older at the time of the abuse (9 years for females versus 12 years for males), experience more perpetration from outside the family, experience substantially more same-sex violations, and experience shorter term abuses (more single versus multiple, chronic incidents). Strauss & Donnelly (1994) report that male victims of childhood physical abuse are more apt to experience chronic and severe forms of abuse than females, especially during adolescence. The different conditions under which males experience abuse may significantly alter their posttraumatic functioning, such that relying on data detailing the posttraumatic effects of females to conceptualize male victims' experiences may lead to inappropriate diagnostic and

treatment practices.

Problem Statement

In the few studies in which the manifestation of posttraumatic processes on the MMPI-2 is explored, elevation of the Pd, Pa and Sc scales has been reported among various populations of abused females. Yet there are no published studies in which the manifestation of posttraumatic effects of, specifically, male clients who present with a childhood abuse history on the MMPI-2 is explored, thus it remains unclear whether the elevation of the Pd, Pa and Sc scales also distinguishes abused male clients from other clinical groups. The study reported herein was directed toward determining whether groups of male clients who self-report a history of childhood sexual or physical abuse could be differentiated from clinical control groups who failed to disclose any abuse history via particular MMPI-2 scales.

Related Issues and Research Questions

This study was designed to address several related issues. In addition to the general lack of MMPI-2 trauma studies that focus on males, there are also no MMPI-2 studies that attempt to examine how the posttraumatic distress of male clients with different abuse, physical or sexual, histories may be manifest. Nor are there studies that systematically contrast abused male outpatients with clinical control groups to determine whether what is interpreted on the MMPI-2 as a manifestation of posttraumatic distress is different from more general psychological distress. In addition to exploring whether the MMPI-2 scales distinguish traumatized from non-traumatized male clinical groups, study 2 explores differences in patterns of the elevation of the Pd, Pa and Sc scales between

groups of physically or sexually abused males and clinical controls to determine whether specific assaults result in variations of posttraumatic effects. Comparisons of mean group profiles and codetypes were also conducted to further explore how variously traumatized and non-traumatized male groups present clinically.

Additionally, there is a need to compare sexually and physically abused male groups with male clients who report experiencing emotional abuse, in addition to assault abuses. These comparisons allow for the exploration of how such compounded abuses impact posttraumatic functioning. In study 2, the MMPI-2 profiles of clients who report emotional abuse, in addition to physical or sexual assault, were also compared to clients who did not report either assault or emotional abuse to explore the impact of these compounded abuses on posttraumatic functioning. Additionally, male outpatients' victimization and subsequent functioning in the context of family environment factors has been neglected. In trauma research controversy exists about whether the disturbances observed in male trauma survivors are due to the actual abuses, or, conversely, to the chaotic family environments often associated with victimization status (Justice & Justice, 1990; Finkelhor, 1984; Strauss & Donnelly, 1994). An alternative hypothesis may be that it is neither the family dysfunction, nor the abuse, exclusively that adversely impacts male victims, but that both variables may interact in ways to either heighten or ameliorate posttraumatic adjustment. Since many abuses are associated with dysfunctional family environments, the impact of family on posttraumatic adjustment was also explored. In study 2, the relative impact of abuse versus family dysfunction on male clients' posttraumatic distress was evaluated via multivariate analyses of covariance. Multiple

regression analyses that employed variables that over-lap between family and abuse categories, such as: emotional abuse, perpetrator identity, extent of abuse, and observation of parental violence in one's home were conducted to explore the relative influences of abuse and family variables on male posttraumatic functioning.

The lack of MMPI trauma studies focusing on male victims is disturbing since the MMPI-2, the most commonly used screening and diagnostic instrument in mental health agencies, is an assessment tool most available to detect posttraumatic functioning specific to male abuse victims. The accurate assessment of such processes is important in ensuring that clients receive appropriate diagnoses and treatment tailored to their specific needs.

Assumptions of Study 2

In addition to the assumptions addressed in Study 1 concerning the veracity of client self-reports and the issue of detecting those subjects who fail to report actual abuse experiences (detection of false negatives), there are additional assumptions specific to Study 2. Specifically, it was assumed that since, on average, the childhood physical and sexual abuse experiences of males differ from those of females, in terms of severity, length of abuse and perpetrator identity, that the post-abuse adjustment of males may differ from that of females. The masculine response to childhood abuse may also be shaped differently from the feminine response due to the differing socializing pressures experienced by the two sexes. For instance, sexual exploration is generally more commonly expected of male than female children. So more male childhood abuse experiences may go undetected, or meet with more benign familial responses, than those of females since these experiences may be more easily attributed to normative male development. Thus, it was assumed it is

important to explore the posttraumatic adjustment of groups of abused males, as results of studies of abused females are not generalizable to male clinical samples.

Study 3:

Assessment of Posttraumatic Distress and Dissociation among

Abused Outpatients with MMPI-2 Scales

Related Research and Rationale for Study

Several researchers have recognized a significant correlation between dissociative processes and a history of severe sexual or physical abuse in various inpatient and outpatient samples (Putnam, 1989; Ross, 1989; Waldinger, Swett, Frank, & Miller, 1994; Zlotnick, Begin, Shea, Pearlstein, Simpson & Costello, 1994). Generally, more severe, chronic abuse, and younger age at onset of abuse are significantly correlated with higher scores on measures of dissociative processes (Kirby, Chu & Dill, 1993; Putnam, 1989, Ross, 1989). Higher mean dissociation scores significantly distinguish clients with diagnoses of Dissociative Identity Disorder, Posttraumatic Distress Disorder, and Borderline Personality Disorder (all diagnoses commonly associated with a history of childhood trauma, especially among females) from clients with diagnoses of Schizophrenia, Affective Disorders and Neurological disorders (Putnam, Carlson, Ross, Anderson, Clark, Torem, Bowman, Coons, Chu, Dill, Loewenstein & Braun, 1996). In spite of the strong association of severe childhood trauma and subsequent development of dissociative processes, there is a lack of MMPI studies that clarify how such processes can be detected on the MMPI.

In a few existing MMPI studies of patients with diagnoses of Multiple Personality

Disorder or Dissociative Identity Disorder, several researchers report consistent elevations in the F and Sc scales, in addition to generally elevated profiles (Allen & Coyne, 1995; Bliss, 1984; Coons, Bowman, & Milstein, 1988; Solomon, 1983). Several researchers have found MMPI 4-8/8-4 codetypes to be the most common among groups of inpatients diagnosed with Dissociative Disorders (Coons & Sterne, 1986; Solomon, 1983). These limited findings suggest that elevation of the Sc scale, among clients reporting severe childhood abuse, may reflect dissociative processes, rather than thought disorders.

Due to the recent construction of the two MMPI Dissociative measures, the North Carolina Dissociation Index (Mann, 1995) and the Phillips Dissociation scale (Phillips, 1994) more specific means of identifying clients with dissociative processes on the MMPI may exist. Yet there are no published MMPI trauma studies exploring the effectiveness of these two measures in detecting clients exhibiting dissociative processes, other than the original validation studies. Both authors report good internal reliability, inter-item correlations and ability of these measures to reliably distinguish groups of dissociative disordered students from other non-clinical groups (Mann, 1995; Phillips, 1994).

The further validation of these scales would promote MMPI trauma research and, possibly, the accurate diagnosis, and subsequent treatment, of clients with Dissociative Disorders. Due to the tendency of Dissociative Disorder clients to exhibit elevated Sc scales (Ellason & Ross, 1995), clinical studies verifying that the MMPI dissociative scales distinguish abused clients experiencing dissociative processes from clients experiencing other thought disorders are needed to decrease the incidence of misdiagnoses and promote appropriate treatments. Presumably, if the dissociation scales do detect dissociative

properties, they will be relatively specific to populations that generally manifest such processes, specifically those who report multiple or childhood traumas. If the MMPI dissociation scales prove to reliably distinguish clients with such abuse histories, this would enhance the utility of the MMPI as a screening and assessment instrument.

Problem Statement

Both the North Carolina Dissociation Index and the Phillips Dissociation scale are constructed from MMPI-2 items and designed to enhance the effectiveness of detecting dissociative processes in order to facilitate the diagnosis and treatment of clients who present with such phenomena. But there are no published studies that explore the effectiveness of either of the dissociation scales in discriminating between abused clinical populations, that commonly manifest dissociative phenomena, and other clinical control groups; therefore it is unclear whether what is measured in these scales is specific to posttraumatic phenomena generally, and dissociative processes specifically, or rather more general psychological distress. The study reported herein was designed to explore the specificity of the MMPI-2 dissociation scales in discriminating between clinical groups self-reporting abuse histories and clinical controls that do not report any abuse experiences.

Research Questions

In addition, this study also addresses the following related questions. Study 3 explores the specificity of the dissociation scales for detecting different types of abuse, physical or sexual, experienced during different developmental periods, adult or childhood, and in both female and male populations. These analyses address the question of whether

the dissociation scales are specific to those types of assaults, childhood and multiple abuses, that are most often associated with dissociative phenomena.

Among those studies that have explored Dissociative Disorders on the MMPI interpretation of the consistent observations of elevated Sc scales among the abused clients across studies has been undermined by: a) small sample sizes, ($n < 20$), (Coons & Sterne, 1986; Solomon, 1983), b) lack of control groups (Allen & Coyne, 1995, Coons, Bowman & Milstein, 1988, Ellason & Ross, 1996; Solomon, 1983), or c) lack of appropriate clinical controls (Bliss, 1984). The lack of appropriate controls and small sample sizes render it impossible to conclude whether the elevation of the F and Sc scales reliably distinguish clients with dissociative disorders from other client groups. Thus, study III explores the ability of the Dissociation, F and clinical scales in distinguishing abused clients from clinical control groups representing clients with alternative clinical disorders.

Both of the dissociative scales incorporate items from the MMPI-2 Posttraumatic Distress (PS and PK), and F scales, so it is unclear if the dissociation scales more reliably distinguish clients with severe abuse histories than do the original MMPI-2 scales. It is also unclear whether the Dissociation scales are more specific for sexually and physically abused clinical groups than these pre-existing scales, one measuring general psychological distress, and the other two designed to detect posttraumatic distress among veteran populations. As both of the dissociation scales are generated from MMPI-2 items, in Study 3 the effectiveness of the dissociation scales in discriminating between abuse groups and clinical controls is compared to that of the pre-existing F and Posttraumatic Distress

Scales.

There are also no studies that compare the relative effectiveness of the dissociation scales and the MMPI-2 Pd, Pa and Sc scales in detecting clients with specific abuse histories. Again, items from the clinical scales have been incorporated into both of the Dissociation scales. Thus, it is unclear whether what is tapped by these two Dissociation scales is truly specific to dissociative processes, or more general posttraumatic distresses that appear to also be reflected in the clinical scales. So, in study 3, the effectiveness of the dissociation scales in detecting abuse groups most likely to manifest dissociative phenomena (childhood abuse and multiply abused groups) was compared to the effectiveness of the Pd, Pa and Sc clinical scales in distinguishing between abused and non-abused clinical groups.

There are no existing studies that explore gender differences in the expression of dissociative phenomenon on the MMPI, since those few studies that do include males, lump male client data with female client data in the analyses (Bliss, 1984, Coons et al, 1988; Solomon, 1983). Since the childhood abuse experiences, that are most highly associated with dissociative phenomena, on average, differ appreciably between the sexes, it is expected that posttraumatic responses on the Dissociation scales may vary between the sexes. So in Study 3, after analyses involving combined-sex samples were conducted to address the issue of whether the Dissociation scales are specific to trauma in general, the analyses were repeated with single-sex abuse and control groups to explore possible gender-specific differences in post-abuse response on the Dissociation scales.

Assumptions of Study 3

An obvious assumption of the rationale of study 3 is that Dissociative Disorders and dissociative phenomena do indeed exist. There is some controversy in the literature about whether Dissociative Disorders are actual responses to severe childhood abuses, or rather, are iatrogenic responses to treatments provided by certain therapists. It is not within the purview of this study to answer such a broad question. Since both Dissociative Disorders, and dissociative processes are recognized in the current DSM-IV, that is based upon extensive field studies, the rationale of this study includes the assumption that such phenomena do exist. A related assumption is that dissociative phenomena, similar to other psychological phenomena such as depressed moods, manifests along a continuum from 'normal' daydreaming to depersonalization states or amnesic fugues, to the development of alter ego states. It is assumed in this study that the majority of clients presenting with a history of childhood or multiple abuses present with moderate variations of dissociative phenomena, such as trance states; and that more severe forms of dissociation such as alter personalities are manifest by clients with the most extreme forms of these abuses. It is also assumed that although the two Dissociation scales were validated with populations assumed to have Dissociative Disorders, that both scales have been constructed to pick up dissociative processes along a continuum, similarly to the other MMPI-2 scales. It is also assumed that the Dissociation scales will be specific to those groups, childhood and multiple abuse, that have been identified in the clinical and research literature as being most closely associated with dissociative phenomena.

Chapter II

MMPI-2 Profiles of Sexually or Physically Abused Female Outpatients

Introduction

Posttraumatic effects are now recognized as common sequelae to physical and sexual abuse or assault experienced by a large number of female clients seeking psychological services. Unfortunately, there are few published studies examining posttraumatic distress among such clients on the MMPI-2. Those studies that do exist often report findings without the use of appropriate clinical controls. In the following study, MMPI-2 profiles of physically or sexually traumatized and non-traumatized clinical groups were compared to distinguish posttraumatic effects from distresses commonly observed in clinical samples. Comparisons were also made between the non-traumatized clinical control group and sexually abused, physically abused, child victimized and adult victimized trauma subgroups to test for abuse type and age of victimization effects on MMPI-2 profiles. Additionally, the MMPI-2 profiles of clients who have experienced emotional abuse, but no assault traumas, were explored to distinguish those distresses that may be attributable to physical or sexual abuse from those due to other types of trauma. Lastly, comparisons of MMPI-2 scales were made between variously traumatized groups using a Family measure to control for effects that may be due to dysfunctional family dynamics. Results indicated that traumatized samples can be distinguished by various combinations of elevated MMPI-2 psychopathic deviate, paranoia, and schizophrenia scales, and that the elevation of these scales, among these groups, reflects a response specific to physical or sexual abuses. Furthermore, family variables appeared to most

strongly mediate the effects of those abuses experienced during childhood.

Review of Literature and Rationale for Study

Over the past several decades mental health professionals have recognized posttraumatic effects in female clients presenting with a history of physical or sexual assault (Browne & Finkelhor, 1986; Courtois, 1988; Herman, 1992; Walker, 1980). Prevalence studies indicate that 40-60% of outpatients report a history of childhood physical or sexual abuse, and present with heightened distress relative to other patients (Herman, 1992). Yet there are few published studies examining the manifestation of posttraumatic phenomena on the MMPI-2 profiles of clients who present with such histories.

Those studies that do exist report some striking trends. For example, various combinations of elevated Pd (psychopathic deviate), Pa (paranoia), & Sc (schizophrenia) scales have been found to distinguish sexually abused female clinical groups from non-abused clinical and non-clinical samples (Goldwater & Duffy, 1990; Gregg & Parks, 1995; Tsai, Feldman-Summers & Edgar, 1979). The Pd, Pa, and Sc scales have also discriminated between battered women from women's shelters, and from women in clinical and community samples (Gable & Handler, 1995; Khan, Welch & Zillmer, 1993; Rosewater, 1988). A significantly elevated Sc scale is also exhibited among: adult and teenage females with an incest history (Scott & Stone, 1986) and inpatients diagnosed with dissociative and posttraumatic distress disorders who report severe childhood physical or sexual abuse vis a vis various non-traumatized controls (Allen & Coyne, 1995; Bliss, 1984; Coons & Sterne, 1986; Solomon, 1983).

The consistent combination of the elevated Pd, Pa and Sc scales across these traumatized samples reflects various processes consistent with posttraumatic phenomena including: heightened vigilance, suspiciousness, anger, dysfunctional family relations, perceptions of the world as dangerous, and ego dystonic disturbances in perceptual, sensory and cognitive functions (Briere, 1989; Courtois, 1988; Herman, 1992). Less consistently, clinical elevations of Hs (hypochondriasis), D (depression), Hy (hysteria), Pt (psychasthenia), and Ma (hypomania) have also been reported among these groups (Allen & Coyne, 1995; Coons & Sterne, 1986; Gregg & Parks, 1995; Nash, Hulsey, Sexton, Harralson, & Lambert, 1993). Significantly elevated F (validity) scales have distinguished sexually abused female outpatients from non-clinical controls (Tsai, et al., 1979).

The consistent constellation of posttraumatic phenomena reported by traumatized women of various backgrounds who share the common experience of assault trauma are thought by many to reflect specific responses to overwhelming traumatic experiences (Browne & Finkelhor, 1986; Herman, 1992; Starr, Maclean, Keating & Wolfe, 1991). Indeed among the possible etiological features of Posttraumatic Stress Disorder and Dissociative Disorder listed in the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1994) are sexual assault, physical attack, and childhood sexual or physical abuse. Yet some researchers have proposed that the psychological distress exhibited by adult females presenting with childhood sexual abuse may reflect, in part, early dysfunctional family relations (Fromuth, 1986; Nash, et al., 1993). In a study of the impact of childhood sexual abuse, Nash, et al (1993) found that in analyses of covariance in which a measure of perceived family environment was treated

as a covariate, significant elevations of various MMPI-2 scales (Pd, Sc, & Si) among the abused group were diminished, but that the main effects of abuse and significant elevations of the Pa and Hs scale remained. Brierre & Elliot (1993) observed a similar diminution in posttraumatic distress scores among sexually abused subjects when subjects' scores were re-analyzed with a family environment covariate. However, Brierre & Elliot (1993) argue that when the locus of the abuse (within or external to the family) is considered, the effects of the family covariate are most salient for victims who have experienced intrafamilial abuse.

A difficulty in attempting to distinguish between trauma versus family effects in such studies is to simultaneously control for both family and abuse effects due to the high inter-correlation of these variables, especially in cases of childhood abuses (Brierre & Elliot, 1993; McKee, King, Benoit, Strassle, Church, Handler, & Klukken, 1997). Especially for females, the majority, 43-74%, of childhood sexual abuse perpetrators are family members (Finkelhor, Hotaling, Lewis & Smith, 1990; Garbarino, 1977). Additionally, other family variables such as: having a stepfather, living in a geographically isolated area, being separated for a period of time from one's mother, having an alcoholic father, or having a mother who was ill or emotionally distant have all been found to be significant risk factors for childhood sexual abuse among females (Benedict & Zautra, 1993; Faust, Runyon & Kenny, 1995; Finkelhor, 1984; Russell, 1984; Gruber & Jones, 1983; De Young, 1982).

Like sexually abused girls, the majority of physically abused girls, 88%, are beaten by members of their family (Garbarino, 1977). Family factors associated with childhood

physical abuse include: parents' unemployment, parents' depression, marital conflict and violence, parental history of having been hit as children, and larger families (Finkelhor, 1984; Strauss & Donnelly, 1994). Due to the family context in which most childhood assault traumas occur, it is difficult to untangle traumatic effects from family dysfunction, or to describe how pathological family dynamics may vary with particular abuses. Global measures of family functioning often fail to explore the specific dynamics of abusing families, and how such dynamics may exacerbate, or ameliorate subsequent posttraumatic adjustment. In other words, trauma and family effects are treated as independent factors impacting later adjustment, when, in fact, both factors may be inextricably bound in most cases of childhood abuse.

In general, women who have experienced physical or sexual trauma appear to exhibit combinations of significantly elevated MMPI-2 Pd, Pa & Sc clinical scales. Less consistently, such populations may show elevations of the D or Pt scales, as well as an over-all elevated profile, reflecting heightened distress. Due to a paucity of MMPI-2 clinical trauma studies, it is unclear whether elevation of these scales distinguishes posttraumatic distress from more general psychological difficulties. It is also unclear how much of the manifest posttraumatic effects are a response to specific traumatic experiences, a reflection of pathological family environments, or both.

Missing from the MMPI-2 literature are studies that systematically contrast the manifestation of psychological distress between differently traumatized female clients and non-traumatized clinical controls. In studies that do include clinical controls, the lack of identification of subjects presenting with alternative traumas (i.e. violent death of a loved

one) may confound reported findings. These unidentified non-assault traumatized subjects may dilute differences between trauma groups and the control group as they too may experience posttraumatic distress. There are also no studies that explore differences between populations that have experienced multiple versus single traumas, or specific adult versus childhood traumas. Nor are there any studies that contrast non-assault family-based traumas, such as emotional abuse and/or neglect, with the assault traumas, such as sexual or physical abuse of childhood. Explorations of differences between these groups may contribute to our understanding of the relationship between trauma, family dysfunction and posttraumatic distress.

Problem Statement

Among the few existing studies that explore the manifestation of posttraumatic processes on the MMPI-2, elevation of the Pd, Pa and Sc scales have been reported among various populations of abused females. Since there are few studies that explore whether these MMPI-2 scales discriminates female clients presenting with an abuse history, experienced at different developmental times, from clinical control groups, it remains unclear if elevation of these scales among abused females reflects posttraumatic processes, or rather, more general psychological distress. The study reported herein was directed toward determining whether groups of sexually and physically abused female clients, who report either adult or childhood victimization, could be differentiated from clinical control groups who failed to disclose any abuse history via particular MMPI-2 scales.

Research Questions

This study was also designed to address several related issues. In addition to exploring whether the MMPI-2 scales distinguish traumatized from non-traumatized clinical groups, differences in patterns of the elevation of the Pd, Pa and Sc scales were explored to determine whether different types of assaults (physical or sexual), as well as different developmental timing of victimization result in variations of posttraumatic effects. The MMPI-2 profiles of emotionally abused clients and clients reporting other, non-assault, types of trauma were also explored to determine whether the elevation of the Pd, Pa and Sc scales differentiate clients with sexual or physical abuse from emotional abuse or other types of trauma. Lastly, since many abuses are associated with dysfunctional family environments, the impact of family on posttraumatic adjustment was also explored. The specific questions addressed are stated in hypothesis form below.

Hypotheses

The following study explores differences in MMPI-2 profiles between: a) assault traumatized and non-traumatized client groups, b) specific subtypes of assault trauma (such as adult physical abuse or child sexual abuse) and non-traumatized clients, and c) among non-assault or emotional abuse groups versus clinical control groups.

Hypothesis 1: The traumatized groups will show generally heightened profiles, and significantly elevated F validity scales, in comparison to non-traumatized groups, due to the extensive distress experienced as the sequelae to assault trauma (Herman, 1992).

Hypothesis 2: Particularly dramatic elevations will be observed on the Pd, Pa, and Sc scales among all the traumatized groups, in comparison to the non-traumatized control

groups. This hypothesis is based upon the assessment in these scales of: maladjustment in family relations, perceptual and sensory disturbances, hypervigilance, heightened fears, suspiciousness, and intrusive thoughts often observed as posttraumatic processes.

Hypothesis 3: Among specific trauma subgroups, child abuse victims will show greater elevations of Sc than adult victims due to children's developmental vulnerability to traumatic disturbances (Browne & Finkelhor, 1986). Additionally, it is hypothesized that significant elevations of Sc should also be observed for the multiply traumatized clients, due to the more complex, chronic form of PTSD associated with multiple traumas (Herman, 1992; Putnam, 1989).

Hypothesis 4: The Pa scale will be significantly elevated for the adult physically abused group, as a consequence of the reactivity of this scale to clients' more recent or current engagement in a violent relationship (Greene, 1991; Rosewater, 1988).

Hypothesis 5: The D, Pt and Ma scales will not distinguish abused subjects from non-abused clinical controls. Although elevations of the D and Pt scales could be consistent with the pervasive constriction of affect and intermittent anxiety associated with posttraumatic effects, and elevation of the Ma scale could be consistent with the agitation associated with some reactive posttraumatic states, these scales are not expected to exhibit significant differences between the traumatized and non-traumatized clinical groups, due to the high numbers of anxiety and affective disorders found among the non-traumatized clinical comparison group.

Hypothesis 6: Neither the non-assault traumatized group nor the emotionally abused group will exhibit significant elevations of the Pd, Pa and Sc scales, when

compared to the non-traumatized control group, because members of these groups have not experienced assault traumas. In contrast, it is hypothesized that the group that reports both assault and emotional abuses is expected to present with significant elevations of the Pd, Pa and Sc scales, when compared to the non-traumatized control group.

Although the non-assault traumatized group has been traumatized, these experiences are, on average, less threatening to the clients' physical well-being, may be acute rather than chronic, and were more likely experienced during adulthood. Also, as most childhood assault traumas also include emotional abuse, these traumas are compounded. Since members of the emotional abuse group have not experienced such compounded abuses, it is expected this group will exhibit relatively enhanced adjustment on the MMPI.

Hypothesis 7: When a measure of perceived family relations is used in analyses of covariance, posttraumatic effects will be diminished in the childhood trauma groups, but not in the adult trauma groups. The experience of childhood trauma is, to a large extent, imbedded in the context of family pathology. Thus posttraumatic adjustment scores should be more significantly mediated by perceived family relationships among clients abused in childhood.

Methods

Subjects

Archival data were collected from 191 female outpatient subjects who sought services at either the University of Tennessee Psychology or Student Counseling Services clinics between January 1990 and January 1998. One hundred and seven of the subjects presented with a history of assault trauma including: 30 subjects who experienced

childhood sexual abuse only, 11 subjects who were victims of adult physical abuse only, 7 subjects who were raped as an adult or teenager only, 13 subjects who experienced child physical abuse only, and 46 subjects who experienced multiple traumas. Of the 46 multiply traumatized subjects: 16 subjects experienced both childhood physical and sexual abuse; 4 subjects experienced childhood physical abuse and a childhood rape; 5 subjects experienced childhood sexual abuse and adulthood physical abuse; 7 subjects experienced both childhood and adulthood physical abuse; 7 subjects experienced both childhood physical and sexual abuse, followed by adulthood physical abuse; 2 subjects experienced both child and adulthood physical abuse and an unrelated childhood rape; 1 subject experienced childhood sexual abuse, adult physical abuse and a childhood rape; and 2 subjects reported both childhood physical and sexual abuse, as well as childhood rapes, followed by adult physical and sexual abuse; 1 subject reported childhood sexual abuse and adulthood rape, and 1 subject reported both childhood physical and sexual abuse followed by a rape as an adult. The no assault (NOT) control group consisted of 85 female outpatients who did not report any physical or sexual abuse. One case was dropped from analyses due to insufficient MMPI-2 scale scoring.

One hundred and seventy of the total sample, for whom this information was available, were also separated into groups based upon the presence or absence of emotional abuse and assault trauma (EMOT/ASSAULT) yielding: 70 subjects reporting no emotional or assault abuses, 16 subjects reporting emotional abuse alone, 43 subjects reporting assault trauma without emotional abuse, and 41 subjects reporting both emotional and assault abuses. Also, 29 subjects were also scored for non-assault traumas

including the recent violent death of a loved one.

The TRAUMA and NOT control groups were not distinguished by age (trauma group $\bar{X}$ = 27 years, control group $\bar{X}$ = 25 years, $t=1.69$, d.f. = 187, $p>.093$), ethnic membership (trauma group included 86 Caucasian and 8 ethnic minorities and control groups included 75 Caucasians and 6 ethnic minorities; $\chi^2 = .076$, d.f. = 1, $p>0.5$), marital status ($\chi^2 = 1.24$; d.f. = 2, $p>0.5$), or income ($\chi^2 = .57$, $df=1$, $p>0.4$). Nor were the TRAUMA and NOT control groups distinguished by measures of cognitive functioning (trauma $\bar{X}$ WAIS-R Full-scale score = 107.12; control $\bar{X}$ WAIS-R Full-scale score = 107.43; $t = .061$, d.f. = 42; $p > .951$); or GPA (trauma $\bar{X}$ GPA = 3.20 & control $\bar{X}$ GPA = 3.04; $t = 1.02$, d.f. = 75, $p > .311$). WAIS-R scores are from Psychology clinic subjects, while the GPA scores are from Student Counseling Center subjects, in cases where such data was available.

Instruments Used and Data Collected

MMPI-2 profiles, demographic information and reported abuse history were collected from archival data obtained during clinical intake procedures and progress notes. Consequently no subjects were contacted personally as a part of this study. MMPI-2 data recorded included scores of validity and clinical scales. Demographic information included age, ethnicity, marital status, occupation and SES.

Subjects were included in physical abuse groups when documentation existed for the following behavioral criteria. Members of the physical abuse groups reported non-normative acts of violence perpetrated against them that they perceived as abusive and

described as intending injury, including being: kicked, punched, hit with an object, choked, burned or cut. Cases that were excluded from the physical abuse groups included corporal punishment administered in public schools and parental spanking that did not include injury. Also excluded were cases in which the subject was hit with an object, such as a belt, during childhood, but that the subject reported as a normative socializing experience. For each member of the child physical abuse category, the relationship of the perpetrator to victim was scored as follows: father/step-father = 1, mother/step-mother = 2, both parents = 3, siblings = 4, others = 5.

The extent of the abuse was scored on a continuum from minimal, to moderate, to severe. Cases were scored as minimal when experiences were described as isolated incidents. Moderate cases included reports of physical abuses occurring over years, but that did not involve weapons or injury. Cases were scored as severe if documentation included descriptions of abuses occurring over years including sustained injury, or use of weapons. Subjects in the childhood physical abuse group reported incidents that occurred between 0 – 18 years old, but did not, in the case of teenagers, involve a romantic partner. The adult physical abuse group included cases of physical abuse occurring after the age of 18 that involved a boyfriend or spouse. These definitions are consistent with those described in much of the trauma literature (Justice & Justice, 1990; Strauss & Donnelly, 1994; Walker, 1980).

Subjects were included in the sexual abuse groups if documentation existed consistent with the following behavioral criteria. Members of the childhood sexual abuse group reported experiencing either non-contact or contact abuses. Non-contact abuses

included: being solicited as a child to perform sexual activities, and being exposed to perpetrator intentionally enacting auto-erotic or sexually provocative acts, such as masturbation or viewing of pornographic movies as a means to involve the child in sexual activity. Contact abuses included perpetrator fondling of breasts, or genitalia, oral or anal intercourse, placing objects in either the vagina or anus, and forced or coerced fellatio, cunnilingus, or manual stimulation of the perpetrator. Subjects were included in the childhood abuse group when they reported incidents occurring between the ages of 0 – 18 years old, perpetrated by a person 5 years older, and that was described by the clients as being non-consensual. Not included were subjects who reported ‘date rape experiences’ that is forced intercourse by a romantic partner between the ages of 15 – 18 years old. These cases were included in the adult sexual abuse group. The adult sexual abuse group also included all members who reported incidents of forced oral, vaginal or anal sexual activity experienced after the age of 18 years old. For each member of the child sexual abuse group, the relationship of the perpetrator to victim was scored as follows: father/step-father = 1, mother/step-mother = 2, both parents = 3, siblings = 4, others = 5.

The extent of the sexual abuse was scored on a continuum from minimal, to moderate, to severe. Cases were scored as minimal when the subject reported few cases of non-contact or contact abuses not involving bodily penetration. Cases were scored as moderate when subjects reported experiencing chronic non-contact or contact abuses that did not include bodily penetration. Severe cases included reports of physical contact that included penetration, as well as cases involving weapons or violence. These definitions are consistent with those described in much of the sexual abuse literature (Briere, 1989;

Browne & Finkelhor, 1986; Finkelhor, 1984; Finkelhor, Hotaling, Lewis & Smith, 1990; Koss & Oros, 1982; Russell, 1984, Wyatt, Guthrie & Notgrass, 1992).

Subjects were included in the non-assault trauma group when documentation existed that they reported traumatic incidents such as: suicide or violent deaths of family members or friends and automobile accidents. The emotional abuse group included subjects who reported chronic verbal harassment by their parents such as name calling or being told they were failures. Subjects were included only if the treatment was described as demeaning and identified by both the client and therapist as emotionally abusive.

Additionally, subject's family-of-origin relations were rated on a Family measure constructed for this study. These ratings were based upon documentation in the case notes or social histories of subjects' descriptions of their families. The Family measure is a 5-point Likert scale yielding a single score that rates family member's nurturing behaviors, communication of warmth and acceptance, quality of attachment, ability to provide for the subjects' physical and emotional needs, and sense of security. Data were collected and archival material rated by 2 advanced clinical psychology graduate students and 1 advanced counseling psychology graduate student; inter-rater reliability for the Family scale was 92% agreement or kappa (k) = .90.

Variables

For the initial analyses, the TRAUMA group ($n=106$) was contrasted with the "pure" non-abused, NOT control group ($n= 85$). The traumatized subjects were then separated into specific abuse groups, based on type of abuse (sexual or physical), and on age at which abuse was experienced (childhood or adult). Specific abuse type categories

were: CHILD PHYSICAL (CP, $n = 51$), ADULT PHYSICAL (AP, $n = 36$), CHILD SEXUAL (CS, $n = 66$ and ADULT SEXUAL (AS, $n = 17$). For analyses of specific abuse effects, each abuse sub-group was contrasted with a “pooled control” including all other subjects, both traumatized and non-traumatized as follows: notAP ($n = 155$), notAS ($n = 174$), not CP ($n = 140$), and notCS ($n = 125$). For each of the trauma categories, the extent of abuse was classified as described above using the variables ExtentCP, ExtentCS, ExtentAP and ExtentAS. For the childhood abuse categories, perpetrator identity was classified as described above using the variables PerpCP and PerpCS.

A subset of the total sample was also classified into a group that had experienced emotional abuse (EMOT, $n=57$) and a group that had not (notEMOT, $n=113$), as described above. Finally, a smaller subset of the total sample was classified into a group that had experienced NON-ASSAULT TRAUMA (NAT, $n=29$) (defined above) and a corresponding control group that had not (notNAT, $n=162$).

For further analyses, two composite variables were created: ABUSE TYPE and EMOT/ASSAULT. ABUSE TYPE has four levels defined by types of assault trauma: no assault trauma (NOT, $n=85$), physical abuse only (PHYSICAL, $n=33$), sexual abuse only (SEXUAL, $n=36$), physical and sexual abuse (MULTIPLE, $n=37$). EMOT/ASSAULT also has four levels defined by whether subjects had experienced emotional abuse and/or assault trauma: a control group with no emotional abuse or assault trauma (Not, $n=70$), an emotional abuse only group (EMOT, $n=16$), an assault trauma only group (either sexual or physical abuse) (ASSAULT, $n=43$), and a group that had experienced both emotional abuse and assault trauma (EMOT+ASSAULT, $n=41$).

Statistical Methods

To test for global posttraumatic effects on the MMPI-2 scales, one-way multivariate analysis of variance (MANOVA) tests were conducted to compare the TRAUMA and NOT groups, and specific abuse subtypes: CHILD SEXUAL, ADULT SEXUAL, CHILD PHYSICAL, ADULT PHYSICAL and NON-ASSAULT TRAUMA, each compared with the appropriate pooled control group. When MANOVA main effects were significant, follow-up one-way ANOVA tests were conducted to identify which MMPI-2 scales were elevated. MANOVA tests were also conducted to determine effects of the composite variables ABUSE TYPE and EMOT/ASSAULT on MMPI-2 scale scores. When MANOVA main effects were significant, follow-up one-way ANOVAs were conducted to identify which MMPI-2 scales differed among the levels, and Bonferroni comparison tests were conducted to identify which specific subgroup means differed significantly. The dependent measures in these comparisons were the MMPI-2 validity and clinical scales. The analyses of the clinical scales were then repeated as one-way multivariate analyses of covariance (MANCOVAs) with the Family measure scores as the covariate to explore the influence of family effects on posttraumatic adjustment. Multivariate linear regression analyses that included extent of abuse and perpetrator identity variables were conducted that predicted variance in family scale ratings for both childhood abuse groups.

For these analyses all positive cases of the relevant trauma subtype were included to maximize the probability of detecting the impact of the specific independent variable on the MMPI-2 scales. For example, when testing the likelihood that physically abused

clients would exhibit significant elevation of a particular MMPI-2 scale than other client groups, all clients with a history of physical abuse were included in the physical abuse group, including those who had also experienced other types of trauma. The emotional abuse and non-assault trauma control groups were 'pooled control' groups comprised of members of the NOT control group, as well as subjects who also reported assault traumas, and thus were classified in both groups.

Results

MMPI-2 Validity and Clinical Scale Analysis

Trauma Effects. The group means are summarized in Table 1*. The multivariate analysis of variance (MANOVAs) of general posttraumatic effects revealed significant main effects for TRAUMA ($F = 7.38$, $df=6/184$, $p = .000$) in comparison to the NOT control group (see Table 1). Additionally, the follow-up univariate F-tests for these comparisons yielded significant elevations of the Pd, Pa, and Sc scales at $p = .000$ across all three comparisons for the TRAUMA group. These results are consistent with the hypotheses #1 and 2 that the assault trauma group would exhibit general profile elevation, as well as specific elevation of the Pd, Pa and Sc scales. No significant differences were found on the D, Pt or Ma scales, as expected by hypothesis #5. A borderline significant difference for the F scale score was observed between the TRAUMA and NOT control ($F=3.72$, $df=1/189$, $p<.055$) groups, consistent with hypothesis # 1.

* All Tables are in Appendix 1

Analysis of Specific Assault subtypes. MANOVAS of the clinical scales were also conducted comparing each of the trauma subgroups, including: CHILD SEXUAL, CHILD PHYSICAL, ADULT PHYSICAL and ADULT SEXUAL subgroups to the respective pooled control groups. As hypothesized, all of the assault trauma groups, except for the ADULT SEXUAL group, revealed significant main effects for trauma (Table 1) compared to the control groups (hypothesis #2). Significant main effects were observed for CHILD PHYSICAL ($F = 4.07$, $df=6/184$, $p < .001$), and CHILD SEXUAL ($F = 3.37$, $df=6/184$, $p < .004$). The follow-up univariate F tests revealed varied results for the 'posttraumatic' Pd, Pa and Sc clinical scales among the abuse subcategories. Both the CHILD PHYSICAL and CHILD SEXUAL abuse group mean scores were significantly elevated on all three Pd, Pa and Sc scales (p 's $< .005$ to $.05$) relative to the pooled control group (see Table 1). Significant main effects were also observed for ADULT PHYSICAL ($F = 3.27$, $df=6/184$, $p < .004$), and significant elevations of both the Pd ($p < .005$) and Pa ($p < .006$) scales were observed in the follow-up univariate F tests.

To assess the relative effects of physical versus sexual abuse compared with the possibly compounding effects of multiple (physical and sexual) abuse, a MANOVA test was run with the ABUSE TYPE variable which has four levels: no abuse (NOT), sexual abuse only (SEXUAL), physical abuse only (PHYSICAL) and both sexual and physical abuse (MULTIPLE). Significant main effects were observed for ABUSE TYPE ($F = 3.32$, $df=18/515$, $p = .000$) compared to the pooled control group, with significant elevation of the Pd, Pa and Sc scales (all p 's $< .001$) in the follow-up univariate F tests (Table 2). In the post hoc multiple comparisons Bonferroni tests, of ABUSE TYPE,

significant elevations of the Pd ($p = .000$), Pa ($p = .000$) and Sc ($p = .000$) scales were observed between the MULTIPLE abuse group in comparison to the NOT, non-traumatized, control group. Although the group reporting physical abuse only exhibited significant elevation of the Pd ($p < .007$) and Pa ($p < .001$) scales, the group reporting sexual abuse only did not exhibit significant elevation of any clinical scale in comparison to the NOT control group.

These findings are largely consistent with hypothesis #2 that the assault trauma subgroups would show elevations of the Pd, Pa and Sc scales. The lack of significant main effects due to adult sexual assault was surprising, given this group's elevated mean group scores on the Pd, Pa and Sc scales scores, relative to the control group (see Table 1), and was contrary to hypothesis #2. This finding may be a reflection of the small number of subjects ($n=17$), in this particular trauma group. As predicted in hypothesis #3, both child abuse and the multiple abuse groups were distinguished from the pooled control group by significant elevation of Sc; while the adult physical abuse group was not. Although the Pa scale was one of the two scales significantly elevated by the ADULT PHYSICAL abuse group, consistent with hypothesis # 4, it was also significantly elevated across all trauma groups that exhibited significant main effects. Across all the assault sub-group analyses, the D, Pt and Ma scales failed to exhibit significant elevation in comparison to the control groups, consistent with hypothesis #5.

Analyses of Emotional Abuse and Non-assault Trauma Effects. MANOVAS of the clinical scales exhibited significant main effects due to EMOT/ASSAULT ($F = 2.70$, $df=18/515$, $p = .000$) (Table 2), but no significant main effects due to NON-ASSAULT

traumas ($F = .722$, $df=6/184$, $p < .632$) (Table 1) relative to the respective controls. In the follow-up univariate ANOVA tests for the clinical scales, EMOT/ASSUALT exhibited significant elevations of the Pd ($p < .002$), Pa ($p < .001$), Sc ($p < .004$) and D ($p < .030$) scales. But in the Bonferroni multiple comparison tests, significant elevation of the Pa, Pd and Sc scales (all p 's $< .003$) were observed only in the group that reported both emotional and assault (physical or sexual) abuses, in comparison to the non-abused group. The group reporting emotional abuse only failed to exhibit significant elevation of any scale, although a nearly significant elevation ($p < .064$) of the D scale was observed, relative to the non-abused (Not) control. The non-significant results of the NON-ASSAULT TRAUMA and the emotional abuse only groups sustained hypothesis #6 that any distress manifested by these groups would not reach the significance level of that reported by the group reporting both emotional abuse and physical or sexual trauma.

Analysis of Family Effects. When the MMPI-2 clinical scale scores were adjusted for family effects via the MANCOVAs, the TRAUMA main effects remained significant in comparison to the NOT control group ($F = 3.60$, $df=6/175$, $p < .002$) (Table 1). In the follow-up univariate F tests, the TRAUMA group retained significant elevation of the Pa scale ($p < .007$), but neither the Pd nor Sc scales retained significance. In contrast, the family MANCOVAs of the trauma subtypes revealed significant main effects due to ADULT PHYSICAL ($F = 2.26$, $df=6/175$, $p < .040$) and CHILD SEXUAL ($F = 2.38$, $d.f. = 6/175$, $p < .031$), but non-significant main effects for CHILD PHYSICAL ABUSE ($F = 1.40$, $d.f. = 6/175$, $p < .22$) in comparison to the respective pooled control groups (Table 1). In the related follow-up F-tests the Pa scale was the only scale to retain its significance

($p < .032$) for the ADULT PHYSICAL ABUSE group. In spite of the significant main effects due to CHILD SEXUAL ABUSE, the elevations of all three, Pd, Pa and Sc, scales for this group dropped below significance. The main effects due to ABUSE TYPE also remained significant ($F = 2.05$, d.f. = 18/490, $p < .007$) in the family MANCOVA, and the follow-up univariate F-tests revealed that only the Pa scale also retained its significance ($p < .004$) (Table 2).

The greater impact of the FAMILY covariate effects on CHILD, rather than on ADULT, PHYSICAL abuse is consistent with the hypotheses #7 that adjustment following childhood traumas would be more influenced by perceptions of family than those experienced as adults. But the relative invulnerability of the main effects of CHILD SEX abuse to the FAMILY covariate is contrary to the assumptions stated in hypothesis #7. The diminution of the significant elevation of both the Pd and Sc scales across trauma groups suggests that these scales are especially influenced by perceptions of family environment. In contrast, the continued significant elevation of the Pa scale observed in the MANCOVAS across trauma groups suggests the Pa scale is somewhat independent of family effects, with the exception of the childhood sexual abuse group.

To examine what combination of childhood abuse variables would best predict FAMILY scores, several multivariate linear regression equations were run which included EXTENT of ABUSE (EXTENTCP (ExtCP) and EXTENTCS (ExtCS), PERPETRATOR identity (PerpCP and PerpCS), and EMOTIONAL abuse (EMOT). Equations in which FAMILY scores were predicted either by extent of childhood physical abuse (EXTENTCP) alone ($F = 69.0$, $df=1/1870$, or extent of childhood sexual abuse

(EXTENTCS) alone ($F = 35.7$, $df=1/187$), accounted, respectively, for 27% and 16% of the variance in FAMILY scores. In contrast, when EMOT was added to EXTENT of abuse, a greater amount of the variance in FAMILY was explained. For subjects physically abused as children, EXTENTCP plus EMOT ($F = 40.9$, $df=2/160$) accounted for 34% of the variance in FAMILY scores; for subjects sexually abused as children, EXTENTCS plus EMOT ($F = 41.2$, $d.f.= 2/160$) accounted for 34% of the variance in FAMILY scores. In these equations, while the relative contributions of the EXTENTCS and EMOT variables appear additive, the relative contributions of EXTENTCP and EMOT seem to over-lap somewhat. See Table 3 for regression equation results.

Interestingly, for cases of childhood physical abuse, when the perpetrator's identity (PerpCP) was added to the EXTENTCP plus EMOT equation ($F = 29.6$, $df=3/154$), PerpCP did not add a significant contribution in predicting for FAMILY score variance (beta weight significance at $p > .05$). For subjects who experienced childhood sexual abuse, perpetrator identity (PerpCS) added significant predictive power (beta weight significance $p < .05$), albeit modestly so, when combined with EXTENTCS plus EMOT ($F = 29.6$, $df=3/154$) as expected. The lack of influence for perpetrator identity, in cases of childhood physical abuse, in predicting significant variance was contrary to expectations.

MMPI-2 Profiles and Codetypes

In keeping with the hypothesis that the trauma groups would show generally elevated profiles, the mean group profiles of the: TRAUMA, CHILD PHYSICAL, CHILD SEXUAL, ADULT PHYSICAL, ADULT SEXUAL, and MULTIPLE groups show clinical elevations of the Hs, Hy, Pd, Pa, Pt and Sc scales, relative to the NOT group

mean profile (Tables 1 and 2 and Figures 1 and 2). The mean differences in elevations between the trauma and NOT control groups are: 9.8 points for Pd (range of 7-12 points), 10.2 points for Pa (range of 8-12 points), and 10.0 points for Sc (range 8-13 points). More modest group mean elevation differences of the Hs, Hy and Pt scales are: 5.7 (range 2-12 points), 5.5 (range 3-8 points), and 4.8 (3-8 points) respectively. The strikingly consistent elevation of the Pd, Pa, Pt & Sc scales across the trauma groups reflects the pervasive distress, anxiety, hypervigilance and ego dystonic alterations in sensory, perceptual and cognitive processes which are common to posttraumatic processes. Additionally, the elevation of the Hs and Hy scales may reflect some somaticization and denial processes often observed in clients who have experienced trauma (Courtois, 1988; Herman, 1992).

Analysis of the mean group clinical codetypes reveals different manifestations of distress among the experimental groups. As a standard, the NOT control group clinical high points are D and Pt (2-7/7-2 codetype) (Table 1 and Figures 1 and 2). The emotional abuse only group (EMOT) also exhibits this same mean group profile (Table 2). The 2-7/7-2 codetype, common among psychiatric populations (Greene, 1991), depicts individuals who are generally anxious, tense, depressed and tend to ruminate obsessively about personal deficiencies.

In contrast, the majority of the assault trauma groups' mean high points include Pd & Sc (4-8/8-4 codetype), with the D, Pt or Pa scales similarly elevated. Individuals with a

* All figures are in Appendix 2

4-8/8-4 codetype are described as having pervasive difficulties with: interpersonal relationships, mistrust of others, perceptions of the world as dangerous, heightened sensitivity to perceived rejections, and modulation of affect. The closely elevated D and Pt scales in these groups indicate these subjects are also anxious, depressed and ruminative. The elevation of the Pa scale among these groups suggests members of these groups are somewhat fearful, tend to be vigilant, and view the world as a dangerous place. The EMOTIONAL + ASSAULT (Both) mean group codetype is 2-8/8-2, with scales 4 and 6 competing for third highest elevation (Table 2 and Figure 3). Thus this group exhibits, with a clinical elevation of scale 7, the compounded effects of the assault abuses on scales 4, 6 and 8; as well as the more general psychological distress on scales 2 and 7 that may, in part, reflect effects due to the emotional abuse.

Discussion

This study was designed to fill a gap in the MMPI-2 trauma literature by systematically comparing the psychological distress manifest on MMPI-2 profiles of female clients who were physically and sexually traumatized during different developmental periods, with the appropriate clinical controls. Additionally, MMPI-2 profiles of clients who experienced emotional abuse and clients who experienced non-assault traumas were explored to help distinguish which posttraumatic effects might be due to pathological family environments or distressing events in general, rather than to assault traumas. The impact of adverse early family experiences on posttraumatic functioning was further investigated in analyses of covariance with a measure of perceptions of family relationships, as well as regression analyses that explored

relationships between various abuse variables and perceptions of family. The results of this study confirmed several of the initially stated hypotheses and are consistent with the trauma literature.

Posttraumatic effects

In this study the striking pattern of significant trauma main effects, and elevated MMPI-2 clinical scales across assault groups, is consistent with the pervasive, chronic distress observed in clients who present with a history of sexual or physical abuse (Browne & Finkelhor, 1986; Rodriguez, Ryan, Vande Kemp & Foy, 1997). Not only did the assault trauma clients, on average, appear to be experiencing heightened distress, as reflected in generally heightened MMPI-2 profiles, but they were also distinguished by specific elevations of the Pd, Pa & Sc scales. The combination of significant elevations of these scales across the assault groups, relative to the general clinical control group, suggests that, while not diagnostic, elevation of these scales may reflect posttraumatic processes, rather than general psychological distress. The conspicuous absence of significant elevation of these scales among the emotional abuse only and the non-assault trauma groups supports that these posttraumatic responses are specific to physical or sexual assaults, rather than to familial dysfunction or trauma in general. These results support the hypothesis that these scales would distinguish assault trauma groups from the non-assault groups, and are consistent with previous MMPI-2 trauma studies (Goldwater & Duffy, 1990; Gregg & Parks, 1995; Khan, Welch & Zillmer, 1993).

The lack of significant distress exhibited by the emotional abuse only group in this study is somewhat inconsistent with the findings of Braver, Bumberry, Green, and Rawson

(1992). These authors reported that sexually, multiply and emotionally abused groups were all distinguished from clinical control groups on the Beck Depression Inventory, the Global Severity Index of the Brief Symptom Inventory, and the Borderline Personality scale of the Millon Clinical Multiaxial Inventory. In this study, the emotional abuse only group did exhibit significant elevation of the MMPI-2 D and Pt scales, somewhat consistent with the heightened depression manifest by the emotional abuse group on the BDI in the Braver, et al. (1992) study. But overall, the emotional abuse only group was not distinguishable from the clinical control group in this study. This may be due, in part, to the small number ($N = 16$) of subjects in this group, or the manner in which the groups were defined in the two studies. Also, the BDI, GSI and MCMI-III, may not detect specific posttraumatic distresses, but rather more general heightened distress. Thus the emotional abuse group in the Braver et al. (1992) study may not have been distinguished from the assault groups due to the dependent measures chosen for that study. In this study, subjects reporting both assault and emotional abuses did exhibit significant elevation of both the Pa and Sc scales relative to the emotional abuse only group, as well as heightened distress on the D, Pd and Pt scales relative to the non-abused groups. Thus compounded emotional and assault abuses appear to interact malignantly in post-abuse adjustment.

Contrary to hypotheses, and previous studies (Goldwater & Duffy, 1990; Gregg & Parks, 1995; Tsai, et al., 1979) was the lack of significant main effects due to adult sexual assault. This observation may be due to the small number of cases ($n=17$) employed in these analyses, as stated previously. Review of the group means for the adult sexual abuse

group (Table 1) reveals clinical elevations, of 7-12 points, across the Hs, Hy, Pd, Pa, Pt, and Sc scales, relative to the non-abused control group, as well as an 7-8/8-7 codetype with scales 4 and 6 competing for third place. Thus the adult sexual abuse group manifests the characteristic heightened distress on the Pd, Pa, and Sc scales that sets the other trauma groups apart from the non-assaulted clients.

Examination of the assault mean group profiles revealed a consistent pattern of generally heightened profiles, and 4-8/8-4 codetypes among the traumatized groups. This codetype has previously been reported among clients with a history of sexual abuse (Archer, Aiduk & Griffin, 1995; Scott & Stone, 1986), and battered women (Rosewater, 1988). It reflects, pervasive, long-term difficulties in interpersonal relationships, perceptual and cognitive distortions, problems in managing impulses and emotional lability (Greene, 1991). These processes are widely documented among populations that have experienced abuse and may reflect a chronic, long-term type of posttraumatic adjustment (Herman, 1992; Kroll, 1993). In contrast, the non-abused controls and emotional abuse only groups were characterized by the 2-7/7-2 codetype, as one would expect, a codetype common among clinical populations that reflects an anxious, depressed, ruminative orientation. The obsessive, ruminative, self-questioning style described by this codetype is also consistent with the depression and low self-esteem thought to be generated by emotional abuse.

Although elevation of the Pd, Pa and Sc scales generally distinguished assault trauma groups, particular combinations of these scales were more prominent among abuse type categories. For example, the Sc scale significantly distinguished clients who

experienced childhood or multiple abuses. The elevation of the Sc scale among childhood trauma groups might reflect greater vulnerability to trauma experienced early in development, rendering such victims susceptible to perceptual and cognitive distortions. The nature of these distortions may be unique to posttraumatic responses. Several researchers have noted the elevation of Sc among sexually abused females (Gregg & Parks, 1995; Scott & Stone, 1986; Tsai, et al. 1979), and severely abused populations exhibiting Dissociative Disorders (Bliss, 1984; Coons & Sterne, 1986; Solomon, 1983). Allen & Coyne (1995) found that elevations of the Sc scale were strongly correlated with severe dissociative processes (dissociation, amnesia and depersonalization), but even more strongly correlated with more benign dissociative processes (absorption and imaginative involvement) measured on the Dissociative Experiences scales. A large number of the traumatized subjects in this sample were relatively high functioning university students. Yet, as a group they exhibit clinically elevated Sc scales. Perhaps what this group is reporting on the Sc scale reflects more benign forms of dissociative, rather than psychotic processes.

Another interesting finding was that among the group mean profiles, the Pa scale assumed prominence as the third highest scale among the ADULT PHYSICAL abuse group and heightened elevation among the other trauma groups. This was consistent with our hypothesis that the ADULT PHYSICAL abuse group would show elevation of this scale due to their more recent engagement in a traumatic experience. The elevation of the Pa scale among these clients may reflect fears experienced in response to real assaults rather than characterological or psychotic-type paranoid thought processes (Rosewater,

1988). Noteworthy is the heightened elevation of the Pa scale among clients physically or sexually abused during childhood, or who reported multiple abuses, the majority of whom (97%) experienced childhood abuse. In these cases the Pa scale elevation may reflect a more habituated, vigilant view of the world as being an inherently dangerous place.

Family versus trauma effects

The trauma effects on MMPI-2 scale scores remained significant when the Family scale was used as a covariate, for all assault groups, except child physical abuse. This suggests that the heightened MMPI-2 profiles of the child physical abuse victims reflect assault experiences, rather than family pathology exclusively. These observations are consistent with findings of other researchers who have observed significant abuse effects, independent of family pathology effects, to distinguish: females with Borderline Personality Disorder (van der Kolk, Perry, & Herman, 1991; Weaver & Clum, 1994), females with Eating Disorders (Hastings & Kern, 1994; Mallinckrodt, McCreary, & Robertson, 1995), and homeless women (Ingram, Corning, & Schmidt, 1996). The impact of abuse, independent of family effects, has also been significant among: females with childhood sexual abuse histories (Chandler & Jackson, 1997, Nash, et al, 1993), children recently abused sexually (Boney-McCoy & Finkelhor, 1995; Mian, Marton & LeBaron, 1996) and college students with low self-concept (Lopez & Heffer, 1998).

In this study, the greater impact of negative perceptions of family relationships on MMPI-2 scale scores among those physically abused as youngsters is not surprising. Among these subjects 98% of their abusers were family members, and 89% were their parents. Thus, their abuse experiences are inextricably bound with their experience of

family. In contrast, although there were a large number (72%) of perpetrators who were family members among the child sexual abuse groups, there were also more extrafamilial perpetrators (28%) than in the child physical abuse group. The relative immunity of the child sexual abuse effects observed on the MMPI-2 scales in the analyses of covariance with the family ratings may be attributable to the greater variance in extrafamilial abuses. For child sexual assaults that occur outside the family, these events are less closely associated with post-assault family perceptions. Consequently, assault and family variables can be assessed somewhat more independently of one another. The additive influence of childhood sexual abuse and disturbed family relations upon post-abuse functioning has been documented by other researchers (Hastings & Kern, 1994). To accurately assess the relative impact of child physical abuse versus dysfunctional family, a group of chronically, physically abused youngsters who have been perpetrated upon by non-family members would have to be compared with the more natural occurring group of chronically, physically abused subjects who were perpetrated upon by parents.

The diminution of the Pd and Sc scales across the assault groups in the covariance analyses suggests that posttraumatic responses on these scales are more strongly related to perceptions of family than are responses observed on the Pa scale. Again, it is not surprising that the Pd scale would be more closely associated with perceptions of family relations, since this scale is designed, in part, to tap such impressions and negative family experiences. The diminution of the Sc scale for the general trauma, abuse type and child sexual abuse groups is interesting, and suggests that family relations may have greater impact upon this scale. Again, a possible explanation may be that as the majority of

childhood sexual abuses are perpetrated by family members, and are experienced at developmentally vulnerable times, such experiences may leave victims at risk for developing distorted perceptions and thought styles that are highly associated with their experience of family. For example, the repression or cognitive compartmentalization of the abuse experiences often observed in victims of childhood sexual abuse (Kroll, 1993), may be adaptive in the family-of-origin environment, but maladaptive to later functioning.

Diminished Perceptions of Family and Childhood Abuse

The association between childhood physical abuse and perceptions of family relations was stronger than the association between adult physical abuse and family perceptions. This finding is not surprising given the family context in which childhood abuses most often occur. High scorers on the FAMILY scale generally perceived their families as rejecting, lacking in nurturance and warm supportive relationships, and failing to provide security or protection. One would expect the experience of being physically, sexually or emotionally abused by a family member to be highly associated with such perceptions.

The negative Family scores of the abused subjects are consistent with previous findings that the dynamics of abusing families are fundamentally different from non-abusing families. Greater family conflict, family disorganization, lower cohesiveness, insecure familial attachments, and presence of alcohol or drug abuse are all family factors that have distinguished families of subjects reporting childhood abuse from those of non-abused subjects (Bulik, Sullivan & Rorty, 1989; Kern & Hastings, 1995; Long & Jackson, 1994; Ray, Jackson & Townsley, 1991; Yama, Tovey & Fogas, 1993). The data

documenting the plethora of ways in which dysfunctional family and trauma factors influence later adjustment has motivated researchers to focus on the concomitant impact of both abuse and family variables on post-abuse functioning (Briere, 1988; Main, Marton & LeBaron, 1996; Sparaccarelli & Fuchs, 1997).

Emotional abuse is also a strong predictor of family perceptions. For both childhood physical and sexual abuse the regression equations that predicted the greatest amount of variance in FAMILY scores included both the extent/severity of the abuse and emotional abuse as predictor variables, with both variables adding significantly to the equation. The inclusion of the emotional abuse factor may better describe the phenomenal experience of many abused children, especially those experiencing physical abuse, as family violence often exhibits a pattern of escalation from verbal to physical aggression (Justice & Justice, 1990). It makes intuitive sense, that for the target of such aggression, both verbal and physical components would impact subsequent perceptions of family.

However, it is noteworthy that although there is a strong association between emotional abuse status and FAMILY scores observed in the regression equations; emotional abuse alone did not exhibit specific effects on the MMPI-2 Pd, Pa and Sc scales. This observation also emphasizes that the MMPI-2 posttraumatic responses directly reflect the assault experiences, rather than emotional distress caused by family pathology. In other words, perception of a dysfunctional family alone, associated with emotional abuse, is not sufficient to cause significant elevation of these scales; the experience of physical or sexual assault appears to be an important etiological ingredient.

The significant association between family, abuse variables and posttraumatic

functioning is not surprising. Future studies that explore these associations, rather than search for effects of trauma or family exclusively, would constructively add to the trauma literature. In other words childhood trauma is, for most victims, embedded in their experience of family. Thus, approaches that attempt to compartmentalize abuse and family variables in attempts to quantify the relative malignancy of trauma, or family, *per se*, may fall short. Research and clinical approaches that attend to the interwoven disturbances of abuses and family are most apt to advance understanding and treatment of childhood assault effects.

Assessment and Treatment Issues

Clearly, the Pd, Pa & Sc scales tap experiences across assault traumatized groups. What these clients are reporting in these scales may be responses unique to posttraumatic adjustment. So the interpretation of these scales must be made in the context of the client's presentation, development and trauma history; to insure that in the tradition of 'do no harm', we do not, as clinicians, unduly pathologize our clients. For example, one of the subjects who had experienced childhood physical abuse in this study was given an MMPI-2 on three different occasions: the first at intake 1 month after the subject had experienced a violent rape, one year after counseling and two years after counseling (Figure 4). In the first profile the client presented with clinically elevated Sc (T = 96), Pd (T=77), Pt (T=77) & Pa (T=75) scales, or a 4-8/8-4 (6-7/7-6) codetype(s). If the experience of the acute trauma was not taken into account, these scale elevations might have been interpreted as reflecting a highly paranoid, anxious individual with a thought disorder. One year after participation in therapy the same individual presented as a 2-7/7-2 (8) codetype (D scale T

= 81 & Pt scale T= 81), or a highly tense, depressed individual who tends to ruminate about personal deficiencies, and experiences some unusual thought processes. The Sc scale had decreased to T=74, and both the Pd & Pa scales were within normal limits. At the last assessment the same individual exhibited a within normal limits profile across all clinical scales with the exception of a 'spikelet' on Sc of T = 67. Thus, the subject presented as a relatively well-adjusted individual who exhibits some colorful, creative thought processes.

This case suggests that the posttraumatic distress originally exhibited by this subject was a response to an acute trauma rather than a characterological, cognitive or affective disorder. Yet examination of the validity scales across the three years reveals that this individual failed to report experiencing acute distress (F scale T = 67) at the initial intake, or at any time. This peculiarity suggests that some of the original distress may have reflected processes to which the subject had become somewhat habituated, perhaps as a consequence of the more chronic trauma of childhood physical abuse. But even these apparently longer-term difficulties were responsive to therapeutic intervention.

Over all, the striking elevation of the Pd, Pa & Sc scales among populations of assaulted, traumatized clients, regardless of the age of victimization, suggests that these scales do tap processes unique to posttraumatic responses. The case described above highlights the importance of appropriate psychological interventions in alleviating such distresses. Hopefully, our study, in concert with the growing body of MMPI-2 studies, will alert clinicians and trauma researchers to the important implications in the elevation of these scales in the treatment and study of trauma.

Chapter III

Trauma and Family Impact on Sexually or Physically Abused Males:

MMPI-2 Profiles

Introduction

Although posttraumatic effects following childhood physical or sexual abuse among female outpatients is widely recognized, less is known about the manifestation of such effects in males who seek psychological services. There are no studies available in which the posttraumatic distress among such clients is examined on the MMPI-2, even though this is one of the most widely used screening instruments in mental health settings. Existing trauma studies often do not include appropriate clinical controls. In this study male outpatients who presented with a history of childhood physical or sexual abuse were compared to clinical control groups to distinguish posttraumatic effects from distresses commonly observed in clinical samples. Generally elevated profiles, and significant elevations of the Psychopathic Deviate, Paranoia, and Schizophrenic scales distinguished male clients with child physical abuse histories from clinical control groups, while relative clinical elevation of these same scales distinguished male clients with sexual abuse histories. Also, in many trauma studies, the relative impacts of the trauma and the dysfunctional family environments often experienced by victims of abuse are not distinguished. In this study, ratings of subject's perceptions of their family relationships were examined in conjunction with abuse history on MMPI-2 measures of distress to distinguish the relative impact of these two variables. Both family and trauma variables appeared to be highly related, and to have significant impact upon posttraumatic

functioning.

Literature Review and Rationale for Study

Posttraumatic effects are now recognized as common sequelae to physical and sexual abuse (Briere, 1989; Browne & Finkelhor, 1986; Herman, 1992). In community and national surveys, about 16% of male respondents acknowledge a history of childhood sexual abuse (Bagley, Wood & Young, 1994; Finkelhor, Hotaling, Lewis & Smith, 1990), and 66 % report being physically abused as youngsters (Strauss & Donnelly, 1994). Such abuses are correlated with increased depression, anxiety, hostility, paranoid ideation, somatization, and suicidal behaviors (Collings, 1995; Fromuth & Burkhart, 1989) in male victims. Male outpatients with a history of sexual abuse also exhibit high rates of mood disorders, anxiety disorders, eating disorders and substance abuse (Olivardia, Pope, Mangweth & Hudson, 1995; Schulte, Dinwiddle, Pribor & Yutzy, 1994). While many abused children do not themselves become abusers, several researchers have found that a significant minority, approximately 30%, of male pedophiles report a history of childhood sexual victimization (Coulborn Faller, 1989; Freund & Kuban, 1994). A history of childhood physical abuse is consistently associated with juvenile and adult perpetration of violent crime (Starr, Maclean & Keating, 1991), wife battering (Strauss & Donnelly, 1996), and child abuse (Kaufman & Zigler, 1987).

In spite of the increased awareness of the pervasive effects of childhood abuse, there are no published MMPI studies in which the manifestation of posttraumatic effects among male mental health outpatients has been investigated. The wide range of posttraumatic effects reported in the trauma literature suggests that clients suffering from

such symptoms may be misclassified as belonging to other diagnostic groups, unless particular constellations of posttraumatic processes can be distinguished from alternative presenting profiles. Since the MMPI-2 is one of the most widely used screening and diagnostic instruments in mental health settings, the lack of MMPI male trauma studies is disturbing. In those MMPI trauma studies that do exist, investigators either focus on female victimization samples solely (Rosewater, 1988; Scott & Stone, 1986), or use mixed gender samples. Those studies that do include traumatized male outpatients within mixed gender groups often fail to use appropriate non-traumatized clinical control groups (Allen & Coyne, 1995; Scott & Stone, 1986). Thus, the specific male response to trauma is obscured as male clients are submerged in larger groups of traumatized females. Also, the particular posttraumatic response of abused versus non-abused male outpatients is unclear.

Findings from MMPI studies of abused females consistently report that the Pd, Pa, and Sc scales distinguish: sexually abused clinical groups from non-abused clinical controls or community samples (Goldwater & Duffy, 1990; Gregg & Parks, 1995; McKee, King, Strassle, Benoit, Church, Klukken & Handler, 1997; Tsai, Feldman-Summers & Edgar, 1979). These same scales have been found to distinguish residents of battered women's shelters from clinical and community samples (Gable & Handler, 1995; Khan, Welch & Zillmer, 1993; Rosewater, 1988). In two studies in which the MMPI-2 profiles of abused male inpatients diagnosed with dissociative disorders were explored, the authors reported significant elevation of the Sc scale among these patients; but these conclusions were based upon small sample sizes of less than 10 males, submerged in larger female samples

(Bliss, 1984; Coons, Bowman & Milstein, 1988).

In most studies in which associations between assaults and MMPI profiles have been investigated, the profiles of male perpetrators rather than victims have been the focus (Yanagida & Ching, 1994; Mann, Stenning & Borman, 1992; Herkov, Gynther, Thomas & Myers, 1996). Profiles of male sexual offenders have revealed various combinations of elevations of Pd, Pa, Sc, and Ma (Herkov, et al 1996; Mann, et al 1992); and profiles of child physical abusers have revealed some offenders are distinguished by 9-4 or 8-4 codetypes (Yanagida & Ching, 1994). Some researchers of criminals have reported that violent offenders are distinguished from non-violent offenders by combinations of elevated F, D, Pd, Pa, Pt, Ma and Sc scales (Baum, Hosford & Moss, 1984; Holcomb, Adams & Ponder, 1993), while other researchers report no differences (Gerstein & Briggs, 1993).

There are also no published MMPI studies in which the posttraumatic distress of male clients with an abuse history has been examined in the context of family environment factors. Some controversy exists whether the disturbances observed in female trauma survivors are due primarily to the actual trauma, or conversely, in part to the chaotic family environments often associated with victimization status (Nash, Hulsy, Sexton, Harralson & Lambert, 1993). The majority (87 %) of child physical abuse (Gil, 1970, Strauss, 1991), and 65 % of childhood sexual abuse, for males, is perpetrated by family members (Finkelhor, 1984). Thus it makes sense that both family and trauma-related variables impact posttraumatic adjustment. In those studies in which family factors have been explored, investigators have often used global measures of family functioning without distinguishing particular aspects of family environments or pathological relations

which may exist in greater or lesser degrees in abusing versus non-abusing, but generally dysfunctional, families. A difficulty in this approach is that all dysfunctional families are treated as dysfunctional in the same way, but the family dynamics that generate different types of abuses may actually differ considerably.

One variable often overlooked in trauma studies is the subject's experience of emotional abuse. Claussen and Crittendon (1991) found that 90% of physically abused children also experienced psychological abuse, while 25-45% of an identified group of emotionally abused youngsters were also physically abused. This suggests that a number of emotionally abused youngsters may not experience other types of assault abuses, while a large number of physically or sexually abused youngster's experiences may be compounded with psychological abuses. Thus the phenomenal experiences of children in assaulting families and non-assaulting families may vary greatly. The study of variables which measure the presence of emotional abuse, the relationship of the perpetrator to the victim, and the extent or severity of the abuse, may contribute to greater understanding of how diverse dysfunctional family environments are related to later symptoms.

There has also been some discussion (Briere & Elliot, 1993) as to whether the use of family measures as covariates in trauma research is appropriate due to the high correlation between family environment and trauma history, with the possible link being the high percentage of family members who are perpetrators (Briere & Elliot, 1993; McKee, et al., 1997). If severely disturbed ratings on family measures are highly correlated with abuse histories, the two variables may be so inextricably inter-related, that when the family covariate measure is factored out, the trauma groupings are effectively

disassembled. An alternative approach is to investigate the relative effects of both variables via Multiple Regression Analyses. Such an approach ensures that the original trauma groupings remain intact, while the relative impact of both variables on the dependent variables can be explored individually and in concert.

Problem Statement

Among the few studies in which the manifestation of posttraumatic processes on the MMPI-2 has been explored, elevation of the Pd, Pa and Sc scales has been reported among various populations of abused females. Yet there are no published studies in which the manifestation of posttraumatic effects of, specifically, male clients who present with a childhood abuse history on the MMPI-2 has been explored, thus it remains unclear whether the elevation of the Pd, Pa and Sc scales also distinguish abused male clients from other clinical groups. The study reported herein was directed toward determining whether groups of male clients who self-report a history of childhood sexual or physical abuse could be differentiated via particular MMPI-2 scales from clinical control groups who failed to disclose any abuse history.

Research Questions

This study was also designed to address several related issues. In addition to exploring whether the MMPI-2 scales distinguish traumatized from non-traumatized clinical groups, differences in patterns of the elevation of the Pd, Pa and Sc scales were explored to determine whether different types of assaults (physical or sexual) result in variations of posttraumatic effects. The MMPI-2 profiles of clients who reported emotional abuse, in addition to physical or sexual assault, were also compared to clients

who did not report either assault or emotional abuse to explore the impact of these compounded abuses on posttraumatic functioning. Lastly, since many abuses are associated with dysfunctional family environments, the impact of family on posttraumatic adjustment was also explored. The specific questions addressed are stated in hypothesis form below.

Hypotheses

In the following study, differences in MMPI-2 profiles were explored between: a) assault traumatized and non-traumatized male outpatients, and b) childhood physically abused or childhood sexually abused male clients and clinical control groups.

Additionally, the impact of family environmental variables, as well as trauma history, extent of abuse, perpetrator relationship to the victim, observation of physical violence in one's home, and presence of emotional abuse or negligence were explored to ascertain the relative impact of such variables on post-trauma adjustment. Lastly, codetype analyses of these clinical groups were compared to explore similarities and differences between these groups.

Hypothesis 1: The general trauma group and both the physically and sexually abused sub-groups will exhibit generally heightened profiles due to the extensive distress experienced as the sequelae to assault trauma (Herman, 1992). This hypothesis is based upon previous MMPI trauma research of female outpatients (Goldwater & Duffy, 1990; McKee, et al., 1997), and clinical descriptions of posttraumatic functioning.

Hypothesis 2: Significant elevations of the Pd, Pa, and Sc scales will be observed among the trauma and childhood physical and sexual abuse groups when these groups are

compared to the clinical control groups. This hypothesis is based upon the assessment in these scales of: maladjustment in family relations, perceptual and sensory disturbances, hypervigilance, heightened fears, suspiciousness, and intrusive thought processes that are often observed in posttraumatic phenomena.

Hypothesis 3: The D, Pt and Ma scales will not distinguish abused subjects from non-abused clinical controls. Although the D and Pt scales reflect the pervasive constriction of affect and intermittent anxiety associated with posttraumatic effects, and the Ma scale does reflect heightened agitation that is observed in some reactive posttraumatic states, these scales are not expected to distinguish traumatized from non-traumatized clinical populations, due to the high number of affective disorders observed among outpatient groups.

Hypothesis 4: The Hy and Hs scales will not distinguish traumatized from non-traumatized groups. Although some somatization is commonly reported among clients with trauma histories (Courtois, 1988; Fromuth & Burkhart, 1989), the common existence of somatization disorders and neurotic personality styles found among clinical populations is thought to overwhelm this effect.

Hypothesis 5: Significant elevation of the D, Pd, Pa, Pt and Sc scales will be observed for individuals who report the compounded trauma of both emotional abuse and assault, compared with non-abused clinical controls. As emotional abuse often results in later difficulties with depression and low self-esteem, it is hypothesized that these clients will exhibit more extreme adjustment problems on the D and Pt scales, in addition to the Pd, Pa and Sc scales reflecting posttraumatic effects of the assault traumas.

Hypothesis 6: When a measure of perceived family relations is used as a covariate in multivariate analyses of variance of the MMPI-2 scales, the main effects due to abuse will be significant, but there will be a diminution of specific significant scale elevations, due to the family context in which most childhood abuses are imbedded. This assumption reflects the impact of both abuse experience and dysfunctional family environment upon later adjustment.

Hypothesis 7: In Multiple Regression analyses, variables related to both the abuse experience and family dynamics will add predictive significance to the regression equations. Based upon this assumption, the variables: extent of abuse, family relationships, emotional abuse, and perpetrator identity and observation of domestic violence are all expected to contribute substantially as predictors of posttraumatic functioning on the MMPI Pd, Pa, and Sc scale scores. Intuitively, it makes sense that both the trauma experience and family climate would correlate significantly with post-trauma functioning. But the chronicity and intensity of the assault are expected to more significantly predict later functioning, compared with family or abuse history ratings alone, due to children's developmental vulnerability to prolonged traumatic disturbances (Browne & Finkelhor, 1986). Because the family is often the source of the trauma, as well as a child's primary source of nurturance, the presence of emotional abuse, as well as the perpetrator relationship to the family, are also thought to impact saliently on subsequent adjustment.

Methods

Subjects and Variables

Archival data were collected from 138 male outpatients who sought services at either the University of Tennessee Psychological Clinic or the Student Counseling Services Clinic between January 1990 and December 1997. Sixty-eight of the subjects presented with a history of assault trauma and comprised the TRAUMA (T) group. Forty-eight of these traumatized subjects experienced childhood physical abuse and make up the CHILD PHYSICAL (CP) abuse group; 27 of these subjects experienced childhood sexual abuse and make up the CHILD SEXUAL (CS) abuse group. Included in the general trauma group were also 3 subjects who experienced adult sexual assault and 7 subjects who experienced adulthood physical abuse perpetrated by intimate partners. Fifteen subjects reported both childhood physical and sexual abuses, and thus were represented once each in the analyses involving the CHILD SEXUAL and CHILD PHYSICAL abuse groups. Only 4 subjects experienced assault traumas during both child and adulthood. The NOT traumatized control group consisted of 68 male subjects who did not report any assault trauma experiences. Additionally, 8 subjects reported observation (OBS) of domestic violence perpetrated by a parent compared to 103 subjects who did not.

Subjects included in the CHILD PHYSICAL abuse group reported experiencing non-normative violent acts, perpetrated against them, which were perceived as having a high probability of causing injury. Such acts are outside the limits of culturally sanctioned corporal discipline of children, consistent with definitions proposed by Strauss and Donnelly (1994) and Justice & Justice (1990). Subjects included in the CHILD SEXUAL

abuse group presented with a history of either contact or non-contact sexual experiences perpetrated by a person at least 5 years their senior, consistent with definitions outlined by Finkelhor (1984). These definitions were also used to rate the extent and severity of the subjects' abuse experiences (ExtCP and ExtCS) as mild, moderate or severe. The relationship of the perpetrator to victim (PerpCP and PerpCS) was scored as follows: father/step-father = 1, mother/step-mother = 2, both parents = 3, siblings = 4, others = 5.

A subsample of the subjects, those for which data were available, was also scored for childhood emotional abuse (EMOT). These subjects reported that a parent chronically called them names and verbally demeaned them. For the MANOVA analyses, a composite variable, EMOT/ASSAULT was created that has four levels defined by whether subjects had experienced emotional abuse and/or assault trauma: a control group (Not, $n=63$) with no reported emotional abuse or assault trauma, an emotional abuse only group (EMOT, $n=7$), an assault trauma only (sexual or physical) group (ASSAULT, $n=23$), and a group that experienced both emotional abuse and assault trauma (EMOT+ASSAULT (abbreviated "Both"), $n=18$).

Demographic Information

The TRAUMA and NOT traumatized groups were not distinguished by ethnic group membership ($\chi^2 = 4.51$, d.f. = 5, $p = .478$); marital status, ($\chi^2 = 2.13$, d.f. = 3, $p > .54$), SES ($\chi^2 = .044$, d.f. = 1, $p > 0.9$), GPA ($t = -.489$, $p > .63$), or WAIS Full Scale scores ($t = 1.79$, $p > .08$). The NOT control group was significantly younger ($\bar{X} = 23.6$ years; $t = -2.32$, $p < .02$), than the TRAUMA group ($\bar{X} = 28.5$ years). MANCOVAs, with

age as the covariate, were run to determine whether age had a significant impact upon the trauma or child physical abuse effects on the MMPI-2 scales. The MANCOVAs with age as the covariate revealed no change in the significant effects due to childhood physical abuse or change in significant elevations of particular MMPI-2 scales at $p < .05$ in the related follow-up univariate F tests. In the MANCOVA with age as a covariate a trivial change was detected in the significance of trauma main effects of $p < .011$, (MANOVA of TRAUMA main effects on clinical scales was significant at $p < .047$ and MANCOVA with age covariate TRAUMA main effects exhibited borderline significance at $p < .058$). No change in the pattern of the TRAUMA groups' significant scale elevations at $p < .05$ were detected in the MANCOVA follow-up univariate F tests.

Instruments Used and Data Collected

Subjects' MMPI-2 profiles, demographic information, and reported abuse history were archival data that had been collected previously as a part of clinical intake procedures and progress notes. MMPI-2 data recorded included validity and clinical scales. Demographic information collected included: age, ethnicity, marital status, SES, and GPA or WAIS scores.

Additionally, subjects' perceptions of their family-of-origin relations were rated on a Family measure constructed for a previous study (McKee, et al., 1997). The Family measure is a 5 point Likert scale yielding a single score which rates the subject's global perceptions of family members' nurturing behaviors, communication of warmth and acceptance, quality of attachment, ability to provide for physical and emotional needs, and sense of security. Data were collected and archival material rated by 2 advanced clinical

psychology graduate students and 1 advanced counseling psychology graduate student.

Inter-rater reliability for the family scale was 92 % agreement or kappa (k) = .90.

Statistical Methods

To test for posttraumatic effects on the MMPI-2 validity and clinical scales, one-way multivariate analysis of variance (MANOVA) tests were conducted on the TRAUMA, CHILD PHYSICAL and CHILD SEXUAL variables. In comparisons in which the assumptions of the MANOVA test were violated, Kruskal-Wallis tests were employed. The TRAUMA group was contrasted with the 'pure' non-traumatized clinical control group, while the CHILD PHYSICAL and CHILD SEXUAL abuse groups were contrasted with 'pooled' controls of all other subjects including both non-traumatized and traumatized subjects who had not experienced that specific type of abuse (notCP and notCS, respectively). The contrast of the general trauma group with the pure non-traumatized control was conducted to explore whether traumatized groups could be distinguished from non-traumatized groups. The contrasts between the trauma subgroups, or specific abuse types, and the pooled controls were designed to test whether subjects presenting with specific abuses could be distinguished from the general clinical milieu that includes other trauma groups. The dependent measures in these comparisons were the MMPI-2 validity (F), and clinical (Hs, D, Hy, Pd, Pt, Pa, Sc & Ma) scales. For these analyses all positive cases of the relevant trauma subtype were included to maximize the probability of detecting the impact of the specific independent variable on the MMPI-2 scales.

One-way multivariate analyses of covariance (MANCOVAs) were then run with

the FAMILY scale as the covariate to explore the relationship between perceived family relationships and abuse experiences on posttraumatic functioning. The relative contributions of the family and trauma variables on the clinical scales were also analyzed with Multiple Regression analyses. For these analyses, ratings from the Family scale, trauma group membership, the experience of emotional abuse, the identity of the perpetrator, observation of violence in one's home, and ratings of the severity of abuse were included as predictor variables. The criterion variables were the MMPI-2 clinical scales.

Results

Analysis of Trauma Effects on MMPI-2 Clinical and Validity Scales

The multivariate analysis of variance (MANOVA) of posttraumatic effects manifested on the MMPI-2 clinical scales (Table 4) revealed significant main effects for the TRAUMA ($F = 2.04$, $df=8/127$, $p < .047$) and CHILD PHYSICAL abuse group ($F = 2.79$, $df=8/126$, $p < .007$) consistent with hypothesis 1 that the abused groups would exhibit generally heightened distress. Contrary to this hypothesis, the CHILD SEXUAL abuse group failed to show significant main effects ($F = .881$, $df=8/126$, $p > .535$) in spite of the clinically elevated mean group scores for the Pd, Pa and Sc scales. The group means are listed in Table 4. The follow-up Kruskal Wallis and F-tests revealed significant elevations of the Pd, Pa and Sc scales for both the TRAUMA and CHILDHOOD PHYSICAL groups (all p 's $< .01$), consistent with hypothesis #2. As expected in hypothesis #3, the TRAUMA group did not show significant differences in elevation of either the D or Pt scales with the NOT control group. Although the CHILD PHYSICAL

abuse group did not exhibit a significant difference in elevation on the Pt scale as predicted in hypothesis #3, a significant elevation of the D scale ($p < .05$) was observed. Contrary to hypotheses #'s 3 & 4, the Hs, Hy and Ma mean scale scores appeared significantly different in comparisons of both the TRAUMA and CHILD PHYSICAL abuse groups (p 's between $p < .05$ to $p < .01$) with, respectively, the NOT and pooled control groups. Yet neither the TRAUMA nor CHILD PHYSICAL mean group scores exhibited clinical elevation on any of the three, Hs, Hy or Ma, scales. Thus the D, Pd, Pa, Pt and Sc scales are the only scales that consistently exhibited clinical elevations across the assault groups.

Also, both the TRAUMA and CHILD PHYSICAL groups exhibited significant main effects on the elevation of the F validity scale. For TRAUMA, $F = 14.45$, d.f. = 1/137, $p = .000$; for CHILD PHYSICAL, $F = 25.81$, d.f. = 1/137, $p = .000$. These findings are consistent with hypothesis #1 that the abuse groups would exhibit heightened distress relative to the control groups. Yet, contrary to this assumption, the CHILD SEXUAL abuse group failed to exhibit significant elevation on the F scale, $F = 2.13$, d.f. = 1/136, $p > .147$. The F scale group means are listed in table 8A.

Analyses of Emotional Abuse Effects

To test for the impact of emotional abuse (EMOT/ASSAULT) on posttraumatic functioning four groups were contrasted: a control group (Not, $n = 63$) that failed to report either assault or emotional abuse, a group reporting emotional abuse only (EMOT, $n = 7$), a group reporting assault, but no emotional abuse (ASSAULT, $n = 23$), and a group that reported both assault and emotional abuse (Both, $n = 18$). A MANOVA contrasting these groups on the MMPI-2 clinical scales resulted in significant main effects

due to EMOT/ASSAULT ($F = 2.47$, $df=24/291$, $p < .01$). Follow-up univariate ANOVA tests revealed significant elevations across all the clinical scales tested (all p 's = .000). But post hoc Tamhane multiple comparison tests revealed that in contrasts between specific sub-groups with the Not control group, it was the group that reported both emotional abuse and assault that exhibited significant elevations on all scales (all p 's $< .01$, except for Hs, $p < .05$), with the exception of Ma, in comparison to the non-abused control group. In contrast, the group reporting assault only, but not emotional abuse, exhibited significant elevations on the Pd ($p < .05$) and Pa ($p < .005$) scales only relative to the Not control. Due to the small size of the group reporting emotional abuse only, results of comparisons involving this group are statistically questionable and thus are not included. These findings support hypothesis # 5 that the group reporting the compounded abuses of both emotional and assault abuses would exhibit the combined after-effects of posttraumatic and depressed processes.

Relationships among Trauma, Family and MMPI-2 Scales

In multivariate analyses of covariance (MANCOVAS) in which the FAMILY ratings of perceived family relationships were used as a covariate to the trauma groups, neither the TRAUMA or CHILD PHYSICAL abuse retained significant main effects for the MMPI-2 scales. For the TRAUMA group, $F = .918$, $d.f. = 8/123$, $p > .504$, and for CHILD PHYSICAL ABUSE, $F = .965$, $d.f. = 2/122$, and $p > .466$ (Table 4). These findings contradicted hypothesis #6 that while a measure of family dysfunction would have an impact upon MMPI-2 scales, the main effects due to abuse would remain significant, or independent of family effects.

Analyses of Family and Trauma Variables Via Multiple Regression

Multiple regression analyses were also employed to further assess the relationship between abuse experiences and family environment with posttraumatic adjustment. Variables used in the regression equations included: TRAUMA (T), CHILD PHYSICAL (CP), CHILD SEXUAL (CS), FAMILY (FAM) ratings, extent of abuse (ExtCP or ExtCS for physical and sexual abuse), perpetrator relationship (PerpCP or PerpCS for physical and sexual abuse), emotional abuse (EMOT) and observation of violence in one's home (OBS). Variables were first entered as a block to predict the MMPI-2 'posttraumatic' Pd, Pa and Sc scores for each particular type of trauma. For each category of abuse, successive equations were devised from the previous one by subtracting out predictors that showed the least over-all contribution to the regression equation via t-tests of the significance of beta weights. In this manner, the most parsimonious equation balancing the fewest variables with the greatest relative amount of explained variance was established. Additionally, the contribution of each predictor in predicting the total amount of variance in posttraumatic scale scores was determined. The results of the regression equations are in Table 6.

The inclusive regression equation employing the global TRAUMA group, EMOT, FAMILY, and OBS predictor variables accounted for 34% of the variance in Pd ($F = 8.72, p < .01$) scores, 31% of the variance in Pa ($F = 6.00, p < .01$) scores, and 31% of the variance in Sc ($F = 7.51, p < .01$). The manner in which each of the predictor variables contributed to the variance in each of the MMPI-2 scales varied somewhat among the scales. For example, the abbreviated equation that appeared to account for,

proportionately, the greatest relative amount of variance in scale scores included:

TRAUMA, EMOT, and OBS, for the Pd scale ($F = 10.7, p < .01$), accounting for 32% of the variance. In contrast, the abbreviated equation for both Pa ($F = 7.91, p < .01$) & Sc ($F = 9.68, p < .01$) included FAM, EMOT and OBS; and accounted for 26% and 30% of the variance, respectively. Interestingly, the variable that exhibited the most precipitous drop in variances once it was subtracted out, across all equations, was OBS, accounting for: a drop of 24% for Pd, a drop of 16% for Pa and a drop of 15% for Sc.

The inclusive multiple regression equation for child physical abuse included: CP, FAM, ExtCP, PerpCP, EMOT, and OBS. This equation accounted for a greater amount of explained variance in each of the MMPI-2 scales: 49% for Pd ($F = 10.1, p < .01$), 36% for Pa ($F = 5.81, p < .01$), and 48% for Sc ($F = 9.36, p < .01$). In contrast to the predictors of the global TRAUMA group equations, the predictors of the CHILD PHYSICAL abuse equations behaved similarly across the analyses of the MMPI-2 scales. The same abbreviated equation exhibited the greatest relative amount of variance for all three scales and included the ExtCP, PerpCP and OBS variables. This equation accounted for 46% of the variance in Pd ($F = 19.36$), 33% of the variance in Pa ($F = 11.56, p < .01$) and 44% of the variance in Sc ($F = 18.39, p < .01$). Again, the greatest drop in variance predicted by each of the regression equations came with the subtraction of the OBS variable: it lost 32% for Pd, 24% for Pa, and 27% for Sc. The results of the regression equations are in table 3.

Although the main effects due to CHILD SEXUAL abuse were non-significant, regression analyses were also employed for this group, to explore the relative contribution

of trauma and family factors in the clinical elevation of these scales. The three extended sexual abuse equations accounted for 37% of the variance in Pd ($F = 6.01, p < .01$), 29% of the variance in Pa ($F = 4.13, p < .01$), and 31% of the variance in Sc ($F = 4.63, p < .01$). In contrast to the child physical abuse analyses, the child sexual abuse abbreviated equations were: EMOT + OBS for Pd, and FAM + EMOT + OBS for both Pa and Sc. These equations accounted for 32 % of the variance in Pd ($F = 16.2, p < .01$), 26 % of the variance in Pa ($F = 7.91, p < .01$), and 30 % of the variance in Sc ($F = 9.68, p < .01$). Across the analyses, subtraction of OBS resulted in the greatest loss of variance: loss of 14% for Pd, loss of 16% for Pa, loss of 15% for Sc. See table 4.

MMPI-2 Profile analyses

Consistent with the hypotheses that the traumatized groups would show generally elevated profiles, both the TRAUMA and CHILD PHYSICAL abuse groups exhibited significant elevations of the F scale. The mean group difference between the F scale with the NOT control compared to TRAUMA is 11.69 points, and compared to CHILD PHYSICAL abuse is 15.76 points. Additionally, the mean group profiles of the TRAUMA and CHILD PHYSICAL abuse groups show clinical elevations of the mean group D, Pd, Pa, Pt, and Sc scales. But the Hs, Hy and Ma scales are only relatively, not clinically, elevated among the trauma groups, that is, in comparison to the NOT control group (Table 4 and Figure 5). The mean differences in scale elevations between the TRAUMA and NOT control groups are 5 - 9 points greater on the Pd, Pa, Sc and Hs scales, and 4-5 points greater on the other four scales. In contrast, the mean scale difference for CHILD PHYSICAL and the NOT control groups are about 5-12 points

greater across all the scales, with specific elevations of 6.9, 7.3 and 11.7 points for the Pd, Pa and Sc scales, respectively. The CHILD SEXUAL abuse group also exhibits elevations on the Hs (+7.4 points), Pd (+ 3.4 points), Pa (+6.6 points), and Sc (+ 7 points) scales, compared to the NOT control group. Yet, contrary to expectations, CHILD SEXUAL abuse failed to show significant effects in the MANOVA analysis. Over-all the striking clinical elevations of the D, Pd, Pa, Pt & Sc scales across the trauma groups may reflect the pervasive distress, anxiety, hypervigilance, and ego dystonic alterations in sensory, perceptual and cognitive processes observed in posttraumatic processes (American Psychiatric Association, 1994).

The EMOTIONAL abuse only (EMOT) group profile was not appreciably different from that exhibited by the clinical control group (Table 5 and Figure 5). Due to the small number, 7, of subjects in this group interpretation of this finding is cautioned. Interestingly, the group that reported emotional abuse as well as assault (EMOTIONAL + ASSAULT) exhibited a generally heightened profile, with significant elevations on 7 of the 8 clinical scales. Thus this group, experiencing these compounded abuses, exhibited heightened pathology relative to the other assault groups as well as the non-abused control group.

MMPI-2 Codetype Analysis

Unexpectedly, the TRAUMA and NOT control groups exhibit similar 7-8/8-7 codetypes, with scales 2, 4 and 6 competing for third highest scale elevation (Table 4). Although the codetypes are similar, the manifestation of distress across the groups probably differs significantly due to the variations in relative scale elevations among the

groups. The NOT control presents as a nearly 'within normal bounds' mean group profile except for slight elevations on: D ($\bar{x}$ = 65), Pd ($\bar{x}$ = 65), Pt ($\bar{x}$ = 68.6), and Sc ($\bar{x}$ = 66.4). Thus, members of this group, on average, may present as anxious, tense, depressed ruminative individuals who tend to be somewhat non-conforming and rebellious (Greene, 1991). The mean group 'spikelet' on Sc may be manifest as creative thinking. These clients generally avoid stress through withdrawal into fantasy, as impulses to act aggressively are probably moderated by anxious, self-conscious ruminations about possible consequences (Greene, 1991). This characterization may aptly reflect the younger-aged and academically oriented control group and clientele of these outpatient clinics, situated on a state university campus. Although composed of male outpatients, the clinical control group's mean scale score elevations show little extreme pathology.

In contrast, the relatively more extreme elevations ($\bar{x}$'s of 70-78) on the Pd, Pa, Pt and Sc scales, in conjunction with the elevation of the D scale across the trauma groups, suggests that members of these groups, on average, present with more maladaptive and pathological forms of distress. Individuals with a 7-8/8-7 codetype, with elevations well into the clinical range, are described as chronically anxious, tense, and agitated, and are plagued by a pervasive sense of inadequacy (Greene, 1991). These individuals tend to ruminate and experience unusual thoughts, perceptions and sensory sensations. Lacking social skills, they tend to withdraw from interpersonal relationships. With additional elevations of the Pd or Pa scales, 7-8/8-7 clients also may be irritable, angry, paranoid individuals who tend to be emotionally labile. They tend to view the world as dangerous,

and others as untrustworthy. Their behavior can be unpredictable, and sometimes violent or bizarre. Under stress, these individuals may act violently expressing their aggressions in antisocial or bizarre ways. If the Pt scale is appreciably elevated relative to the Pd scales, they may exhibit cycles of remorse after violent outbursts. As stress increases, such clients may experience increasingly bizarre thoughts, and display disorganized behaviors (Greene, 1991).

The group reporting emotional abuse only presents, similar to the NOT control, with a within normal limits profile (all T scores ≤ 65) (Table 5). In contrast, the group reporting emotional abuse plus assault presents similarly to the other trauma groups with an 7-8/8-7 profile, and scales 4 and 6 competing for third highest scale. Additionally, this group exhibits clinical elevations of Hs, D, Hy and Pt, suggesting that denial and somaticization defenses may be more salient among members of this group, than the other assault groups (Greene, 1991). The mean group profiles are plotted in Figure 5.

Discussion

Posttraumatic Effects and MMPI-2 Scales

This study was designed to fill a gap in the MMPI-2 trauma literature by exploring manifestations of posttraumatic effects of male outpatients presenting with histories of various assault traumas. As predicted, both the trauma and physical abuse groups exhibited generally heightened profiles and significantly elevated F scales, relative to the clinical control group. This may indicate that clients with histories of assault trauma or physical abuse, on average, present with more extreme complaints relative to the general outpatient population. Also consistent with our hypotheses, the global trauma, and both

childhood physical and sexual abuse groups were generally characterized by clinical elevations of the Pd, Pa and Sc scales, as well as D and Pt scales. Partially consistent with our hypotheses, only the Pd, Pa and Sc scales significantly distinguished both the trauma and physical abuse groups from the clinical control group.

Inconsistent with our hypotheses were the lack of significant differences on these scales between the clinical control group and the child sexual abuse group. One explanation for this finding may be the relatively elevated 'pooled' control against which the CHILD SEXUAL abuse group was actually compared for this analysis. While the NOT control group is a fairly pure control, in that none of the group members report any assault trauma, the 'pooled control' contains both non-assault controls, as well as clients who reported childhood physical, but not sexual abuse. Thus, the pooled control contains some scale elevation due to other forms of trauma, which may act to mask the effects of sexual abuse.

This possibility was explored, post hoc, by comparing the mean group differences in scale elevations between the pooled and NOT controls with CHILD SEXUAL. As suspected, mean scale score differences between the pooled control and CHILD SEXUAL abuse were 2-4 points less than the mean scale score differences between CHILD SEXUAL and the NOT control group. Thus the probable significant 6-7 points elevation difference between CHILD SEXUAL and the pure non-abused (NOT) control on the Hs, Pa, and Sc scales were reduced by the use of the pooled control group. The impact of the 'pooled' control may also be exacerbated by the small size of the CHILD SEXUAL abuse group ($n = 27$).

The elevation of the Pd, Pa and Sc scales among various sexually or physically abused female populations has been documented in the literature (Goldwater and Duffy, 1990, Gregg & parks, 1995, Tsai, Feldman-Summers, & Edgar, 1979, Rosewater, 1988). The findings of this study suggest that adjustment among males following childhood physical or sexual abuse, seems similar to that of females. Also, the significant elevations of the Pd, Pa and Sc scales among the abused male outpatients in this study implies that clients who present with assault trauma, and childhood physical abuse in particular, may be distinguished by posttraumatic effects detected on these scales. Over-all, the striking pattern of clinical elevations of the D, Pd, Pa, Pt and Sc scales across the trauma groups may reflect the pervasive distress, anxiety, hypervigilence, and ego dystonic alterations in sensory, perceptual and cognitive processes observed in posttraumatic processes (Herman, 1992; Kroll, 1993, Browne & Finkelhor, 1986, Rodriguez, Ryan, Vande Kmp, & Foy, 1997).

Consistent with hypothesis 3, the trauma group was not distinguished by significant elevations of either D or Pt, relative to the clinical control group. Surprisingly, the physical abuse group did present as significantly more depressed than the clinical control group, but there was no difference on the Pt scale. The general lack of differentiation between the control and trauma groups on the D and Pt scales is probably a consequence of the high number of anxiety and affective disorders among outpatients. The relative significant elevation of the D scale for physically abused male clients suggests this particular type of abuse may result in pervasive, long-term dysphoria. Depression has been widely documented among populations who report childhood physical abuse

(Browne & Finkelhor, 1986; Edwards & Donaldson, 1989; Whiffen & Clark, 1997).

Although both the trauma and the physically abused group exhibited significant elevations of the Hs, Hy and Ma scales relative to the clinical control, neither group manifested clinical elevations on these scales. The child sexual abuse group showed a similar pattern of relative scale elevation. The sub-clinical elevation of the Hs and Hy scales among the trauma groups may reflect the somaticization, conversion, and denial processes often observed in posttraumatic states.

The lack of difference between the emotional abuse only group and the control was congruent with expectations. In contrast, Braver, Bumberry, Green, and Rawson (1992) found, in a study of college student clients, that an emotional abuse group was significantly differentiated from non-abused controls, as were sexual or multiply abused groups. These findings may be due, in part, to the measures chosen for the Braver, et al. (1992) study: the Beck depression inventory, the MCMI-III Borderline personality scale, and the BSI- Global Severity index. Since these measures are not specific to posttraumatic processes, it is not surprising that they do not distinguish among emotional, sexual and multiple forms of abuse. General heightened distress and depression is replicated for the physically abused and general trauma groups in this study, but neither for the emotional only or sexual abuse groups. At any rate, there is a paucity of studies in which various forms of abuse, including emotional abuse, are contrasted. To better distinguish the possible variant forms of post-abuse functioning, more such studies need to be conducted.

Relationships of family factors and abuse factors to posttraumatic adjustment

In the MANCOVAs that incorporated the FAMILY rating scale as a covariate, both trauma and child physical abuse exhibited loss of main effects. This is understandable, since childhood abuse is, for the most part, embedded within the family. Thus, both family and trauma variables may be so inextricably interrelated that such analyses may act to effectively cancel out groupings of clients into abused versus non-abused categories. Again, this makes intuitive sense, as the FAMILY scale, measuring perceptions of one's family, would seem to be vulnerable to lasting impressions, resentments and hostilities engendered by abuses perpetrated by family members, or abuses perpetrated in the absence of perceived familial protection.

In multiple regression analyses the complex, intricate way in which family and abuse-related variables are related with one another, and individually contribute to posttraumatic adjustment, was further elucidated. For the general trauma group the relationship of family and trauma variables varied across each of the three regression equations for the MMPI-2 scales. Thus while trauma group membership and emotional abuse appeared to better predict variance in Pd scales, family and observation of violence appeared to be more strongly related to Pa. In contrast, the equation that explained the greatest relative amount of variance for the Sc scale included trauma, family rating, emotional abuse and observation of violence. Thus, these analyses reveal that family and trauma factors are related to different measures of posttraumatic adjustment in variable and overlapping ways. For example, the variable that showed the greatest contribution to explained variances, across analyses, was observation of parental violence. This variable

epitomizes the manner in which childhood traumas are impacted by both family and abuse variables in concert, as the perpetrator of the violence is also a parent.

In contrast, the child physical abuse equations revealed that the combination of the same three variables, extent of abuse, perpetrator identity, and observation of parental violence, resulted in the greatest relative amount of explained variance across each of the regression equations. Two of these variables also illuminate how family and abuse experiences are often interrelated. In the child physical abuse group 88% of the subjects were abused by a parent. The observation of violence within the home perpetrated by one parent towards the other, involves family members as both perpetrators and victims, but the extent of the abuse, a measure of the amount of injury inflicted as a result of the abuse, is more purely an assault variable.

For the child sexual abuse equations, the family rating and observed domestic violence proved to most strongly predict the explained variance in MMPI-2 scales. This finding suggests that for childhood sexual abuse among males, perceptions of family support and nurturance may greatly influence later adjustment. The relative importance of family in recovery from this type of abuse may be related to several characteristics of the abuse experience. In this study, 35% of the sexually abused clients were perpetrated upon by a family member. Interestingly, a higher number of sexual abuse experiences, 57 %, were rated as being extreme in severity in contrast to 49 % of the physical abuse experiences that were rated as being severe. Possibly, extent of the sexual assault may not be as good a predictor for MMPI-2 scale scores as extent of physical abuse, since severe assaults that occur outside the family may be more readily overcome than those

experienced within the family.

Another factor that may explain the disparity of functioning between physically and sexually abused males is that a higher number of the sexual assault experiences were single incidents, whereas the physical abuse experiences were chronic childhood experiences. Thus childhood physical abuse among males may more consistently result in later dysfunction than childhood sexual abuse, due to, on average, the more chronic nature and higher incidence of parental perpetrators that characterizes this type of abuse. The stronger association between family ratings and posttraumatic functioning among males in the childhood sexual abuse group may be due to greater variance in perpetrator identity for this group. As fewer males in the sexual abuse group were perpetrated upon by parents as youngsters, these males may have experienced their family as more supportive and a greater resource than the physically abused males. The importance of the observation of family violence in predicting post-abuse functioning may reflect the deleterious effects of vicarious traumatization. It is important to remember for a number of clients who experienced childhood sexual abuse that posttraumatic distress was visible on the Pd, Pa and Sc scales as reflected in the heightened mean group scale scores.

This study adds to the growing MMPI-2 trauma literature by focusing exclusively on the posttraumatic functioning of male outpatients. These abused males manifest their distress in ways similar to the populations of abused females that have been documented in the MMPI-2 trauma literature. Like their female counterparts, these traumatized males are distinguished from other clinical groups via significant elevations of the Pd, Pa and Sc scales. The characteristic elevation of these three scales among abused populations

transcends gender, and suggests these scales may manifest posttraumatic processes.

Unfortunately, due to the small numbers of males presenting with complaints of adult assaults, developmental effects on posttraumatic adjustment could not be addressed within this study. The relative impact of family dysfunction was addressed, and appears to be intimately associated with posttraumatic adjustment. The study of variables such as perpetrator identity and observation of violence in one's home provides a more thorough assessment of how family and abuse experiences mutually impact later adjustment. Future studies that include such variables may more constructively add to understanding of the interwoven influences of family and assault on mental health.

Chapter IV

Assessment of Posttraumatic Distress and Dissociation among

Abused Outpatients with MMPI-2 Scales

Introduction

Several researchers have observed significant elevations of the MMPI-2 psychopathic deviate (Pd), paranoia (Pa), and schizophrenic (Sc) scales among various populations of women with abuse histories. In previous studies, I found these same scales distinguish male and female out-patients who report childhood physical or sexual abuse; and multiply abused female out-patients tend to exhibit the highest elevations of these scales, especially F and Sc. Elevation of F and Sc has characterized populations diagnosed with Dissociative Identity Disorder. Yet these scales were not constructed to tap dissociative processes, so the meaning of these scale elevations among abused populations remains unclear. Recently, two MMPI-2 scales, the North Carolina (NCDI) and the Phillips Dissociation (PDS) scales, were designed to discriminate dissociative phenomena from other forms of distress. In this study, the ability of these two scales to discriminate female and male abused clinical groups from clinical controls was explored. Additionally, the dissociation scales were compared to the MMPI-2 Posttraumatic scales, PK and PS, the F validity scale, and the Pd, Pa, and Sc clinical scales with respect to accuracy of identification of abused groups. Both the NCDI and the PDS were found to distinguish childhood physically and multiply abused groups, from clinical controls, but no more accurately than the Posttraumatic or validity scales. The dissociation scales failed to identify childhood sexual abuse groups. The Pd, Pa and Sc scales were found to most

consistently identify both adult and childhood abused groups. Gender differences in posttraumatic responses among the MMPI-2 scales are discussed.

Literature Review and Rationale for the Study

Dissociative phenomena are now recognized as extreme effects among the plethora of symptoms often observed in people who have experienced either physical or sexual abuse as children (Zelikovsky & Lynn, 1994; Putnam, 1989; Brown, 1994; Carlson & Armstrong, 1994; Kroll, 1993; Terr, 1991; Ross, 1989). Furthermore, some dissociative processes are associated with : Posttraumatic Stress (PTSD), Dissociative Amnesia, Dissociative Identity (DID), and Borderline Personality (BPD) (American Psychiatric Association, 1994; Kroll, 1994) disorders. Among these disorders a continuum of dissociative phenomena are recognized such as: depersonalization states in BPD; fragmented traumatic memories, or flashbacks, in PTSD; and compartmentalized alter-ego or identity states in DID (van der Kolk, 1996). Childhood physical or sexual abuse is implicated, in the DSM-IV, as an etiological factor in the description of each of these disorders (American Psychiatric Association, 1994).

The current diagnostic prevalence rate for Dissociative Disorders, involving full-blown alter-ego states, is reported as being between 2.4 and 11.3 % (Carlson & Armstrong, 1994, van der Kolk, 1996). The authors believe these statistics may underestimate the actual incidence of DID among abused patient groups, and implicate practitioners' lack of knowledge in assessment or disbelief as being the culprit. Among DID patients, 86-100 % report a history of either childhood physical or sexual abuse (Saxe, van der Kolk, Berkowitz, Chinman, Hall, Lieberg & Schwartz, 1993). In studies of

outpatient clinics, Herman, Perry, & van der Kolk (1989), report 81 % of a group of patients diagnosed with Borderline Personality Disorder also had a history of childhood sexual or physical abuse. Rodriguez, Ryan, Van de Kamp & Foy (1997), found 86.7 % of a group of female outpatients reporting childhood sexual abuse met the criteria for PTSD, and 89 % of these women also reported childhood physical abuse.

In spite of the high numbers of patients who present with histories of physical or sexual abuse, there are few MMPI-2 trauma studies that focus on the manifestation of such processes on the MMPI-2. Among those studies that do exist, clinical elevation of the F, validity, and Sc scales, as well as generally elevated profiles, have consistently been found to characterize patients identified with Dissociative Identity Disorder (Allen & Coyne, 1995; Bliss, 1984; Coons Bowman & Milstein, 1988; Coons & Sterne, 1986; Solomon, 1983). Unfortunately, the majority of these studies were descriptive in that they failed to employ: adequate n, that is, $n > 20$ (Coons & Sterne, 1986; ; Solomon, 1983), any control groups (Allen & Coyne, 1995; Coons, Bowman & Milstein, 1988; Ellason & Ross, 1996; Solomon, 1983), or appropriate clinical controls. One study that did incorporate controls used members of a church group, nurses, technicians, and graduate students (Bliss, 1984), thus contrasting the dissociative group with a highly functioning community, rather than a clinical control. Such oversights in experimental design yield findings unclear as to whether the distress manifested on the MMPI-2 is associated with the abuse, per se, or general psychological distress.

Interestingly, various combinations of the elevations of the Pd, Pa and Sc scales are found to distinguish: adult and teenage females with a history of incest (Scott & Stone,

1986), female outpatients with a history of sexual abuse (Gregg & Parks, 1995; Griffith, Myers, & Tankersly, 1996; Tsai Feldman-Summers, & Edgar, 1979); and battered women (Gable & Handler, 1995; Rosewater, 1988; Rhodes, 1992; Khan, Welch & Zillmer, 1993). In previous studies, (McKee, King, Strassle, Church, Benoit, Klukken, & Handler, 1997; McKee, Strassle, King, Klukken & Handler, 1998), we have reported that combinations of these scales exhibit significant and clinical elevations across groups of female outpatients who report childhood sexual, physical or adult physical abuses, and groups of male outpatients who were physically abused as children. In addition to Pd, Pa and Sc, several researchers have reported various elevations of Hs, D, Hy, Pt, Ma, or Si (Follette, Naugle & Follette, 1997; Griffiths, Myers, Cusick & Tankersley, 1997; Nash, Hulsey, Sexton, Harralson & Lambert, 1993) among populations of women reporting childhood sexual abuse. The strikingly consistent pattern of Pd, Pa and Sc scale elevations across various groups of victimized females and one group of males suggests that these scales may reflect posttraumatic processes.

Investigations of the MMPI-2 validity, supplementary and content scales have also revealed heightened distress among clients with histories of assault traumas, such as sexual or physical abuses. Elevations of the PS or PK (posttraumatic stress) scales have been reported among sexually abused female outpatients (Gregg & Parks, 1995), women's shelter residents (Khan, Welch & Zillmer, 1993), and battered female outpatients (Gable & Handler, 1995). The significant elevation of PK and PS have also distinguished psychiatric patients reporting ritual abuse from non-abused clinical controls (Noblitt, 1995).

Significantly elevated F scales have distinguished sexually abused female outpatients from

non-clinical controls (Tsai, Feldman-Summers & Edgar, 1979).

Except for the study described above, there is no other published MMPI-2 trauma study in which the focus is exclusively on the manifestation of post-traumatic distress among males. Most MMPI-2 trauma studies involving males focus on male perpetrators, rather than victims (Kaufman & Zigler, 1987; Yanagida & Ching, 1994). There does exist one study in which the profiles of male Borderlines were described somewhat similarly to those of trauma groups (Snyder, Pitts & Goodpaster, 1982), but, unfortunately, the investigators did not document subjects' abuse histories. Among the MMPI-2 dissociation studies, several do include a subset of male patients submerged in a larger sample of female patients, thus, any gender effects in manifestation of dissociative processes may be masked by the majority female response on the MMPI-2.

Recently, two dissociation scales, the North Carolina Dissociation Index (NCDI) (Mann, 1995) and the Phillips Dissociation scale (PDS) (Phillips, 1994) have been constructed from MMPI-2 items. Both authors contend that their scales are able to significantly distinguish subjects with Dissociative Disorders from controls. Phillips (1994) reports his 20-item scale has distinguished a clinically diagnosed dissociative group from a clinical control group. Mann (1995) distinguished students who scored in the dissociative range on the Dissociation Experiences Scale (DES) from a larger group of students who did not, in a group screening, as well as a group of veterans diagnosed with PTSD from a group of veterans with no such diagnosis. Additionally, two research groups, Griffith, Myers, & Tankersly, 1997, and Korbanka, 1997, have independently developed MMPI-2 scales that are reported to successfully distinguish groups of sexually

abused female outpatients from non-abused controls.

In spite of the possible utility of these scales in the early detection of trauma-related disorders, no published studies have explored the accuracy with which the dissociation scales are able to distinguish various abuse groups. In his study of the Griffith, et al. 1997 sexual abuse scale, Brophy (1997) reported that mean scale scores of female inpatients were substantially higher than the scores of non-abused community women, but only slightly higher than sexually abused community females. Interestingly, he suggested this indicates this particular scale may reflect general psychological anguish, rather than distress specific to sexual abuse. As the scales identified as distinguishing trauma-related distresses proliferate, there is a need to test their ability to do so among various traumatized populations.

There is a lack of recent MMPI-2 research that explores dissociative phenomena. There is a veritable dearth of studies that focus on the posttraumatic adjustment of abused males on the MMPI-2. Nor are there any MMPI-2 studies that explore gender differences in posttraumatic functioning via the MMPI-2. Lastly, since their inception, there are no studies validating the utility of the NCDI or PDS in distinguishing various abused patient groups. Further validation of these scales would promote MMPI-2 trauma research, and the accurate diagnosis and subsequent treatment of clients experiencing dissociative phenomena. A large number of Dissociative disordered clients exhibit elevated MMPI-2 Sc scales, and are often misdiagnosed with Schizophrenia (Ellason & Ross, 1995). Therefore, clinical studies verifying the predictive ability of the MMPI-2 Dissociative scales in distinguishing clients experiencing dissociative processes from other client groups

are needed. As both dissociative scales include items from the MMPI-2 PTSD scales, F, and clinical scales, it is unclear whether the particular combination of items within these scales more reliably distinguishes clients with severe abuse histories than any of these pre-existing scales.

Problem Statement

Both the North Carolina Dissociation Index and the Phillips Dissociation scale are constructed from MMPI-2 items and designed to enhance the effectiveness of detecting dissociative processes in order to facilitate the diagnosis and treatment of clients who present with such phenomena. But there are no published studies addressing the effectiveness of either of the dissociation scales in discriminating between abused clinical populations, that commonly manifest dissociative phenomena, and other clinical control groups is; therefore it is unclear whether what is measured in these scales is specific to posttraumatic phenomena generally, and dissociative processes specifically, or rather more general psychological distress. The study reported herein was designed to explore the specificity of the dissociative scales in discriminating between clinical groups self-reporting abuse histories and clinical controls that do not report any abuse experiences.

Research Questions

In addition, this study also addressed the following related questions. As both of the dissociation scales are generated from MMPI-2 items, the effectiveness of the dissociation scales in discriminating between abuse groups and clinical controls is compared to that of the pre-existing F and Posttraumatic Distress Scales (PK and PS). This was done to determine whether the Dissociation scales are more specific for sexually

and physically abused clinical groups than these pre-existing scales, one measuring general psychological distress, and the other two designed to detect posttraumatic distress among veteran populations. Additionally, the effectiveness of the dissociation scales was compared to that of the Pd, Pa and Sc clinical scales in distinguishing between abused and non-abused clinical groups. Again, this comparison explored whether the dissociative scales are more specific to abuse experiences in general than the three clinical scales that have been most often implicated in the presentation of posttraumatic phenomena. The following study also explored the specificity of the dissociation scales for detecting different types of abuse, physical or sexual, experienced during different developmental periods, adult or childhood, and in both female and male populations. These analyses address the question of whether the dissociation scales are specific to those types of assaults, childhood and multiple abuses, that are most often associated with dissociative phenomena. Finally, by making these comparisons first with mixed-sex samples, and then with single-sex samples, the study first addressed the issue of whether the dissociation scales detect abuse histories in general, and then explored possible differences in detection of gender-specific manifestation of posttraumatic distress. Below are the research questions stated in hypothesis form.

Hypotheses

The following study was designed to address a void in the clinical MMPI-2 trauma literature by focusing on the validity of the Dissociative scales. In this study, various groups of abused female and male clients were contrasted with clinical control groups on the NCDI and PDS to determine whether these two scales are able to distinguish

particular abuse groups. Additionally these same groups were compared on the MMPI-2 Posttraumatic (PK & PS) scales, F validity scale, and Pd, Pa and Sc clinical scales. These analyses explored which MMPI-2 scales most reliably distinguish abused groups. Lastly, gender differences in abused female versus male posttraumatic responses on these scales were explored.

Hypothesis 1: The NDCI and the PDS will most accurately distinguish groups that have been abused multiply or during childhood, rather than adulthood, from non-abused clinical controls. The majority of clients who present with Dissociative disorders, Borderline Personality Disorder, or Posttraumatic Stress Disorder, report severe childhood sexual or physical abuse (Kroll, 1993). Thus dissociative processes are thought to be a response to overwhelming traumas experienced during developmentally vulnerable times. Although adult physical or sexual assaults are also recognized as resulting in adjustment difficulties, these traumas are not thought to overwhelm more normative coping processes.

Hypothesis 2: The F scale and both of the posttraumatic stress scales PK and PS will distinguish all trauma groups, both adult and child, and either physically or sexually traumatized, from clinical controls. The F scale elevation is expected to reflect the heightened distress often exhibited in both acute and chronic posttraumatic responses (Herman, 1992). All traumatized groups are expected to show significant elevations of the PK and PS scales, since the posttraumatic effects tapped by these scales closely resemble those observed in sexually and physically abused populations.

Hypothesis 3: The three clinical scales, Pd, Pa and Sc will also distinguish all trauma groups. In previous studies, elevation of these scales has consistently distinguished traumatized groups from clinical control groups (McKee, et al., 1997 & 1998). Plausibly, part of what is being manifest in these scales may be a range of posttraumatic responses, from hypervigilance on Pa, to dissociative phenomena on Sc. In contrast the D, Pt and Ma scales are hypothesized to not discriminate between abused and control groups, as these scales reflect processes commonly observed in affective disorders that are commonly experienced among clinical outpatient groups.

Hypothesis 4: The female childhood sexual abuse group will be more reliably identified by the dissociative scales than males with such a history. The majority of clients who present with dissociative disorders are females by a ratio of 5-1 (Putnam, 1989) or 9-1 (Ross, 1989). In one study, when asked, 100% of these clients reported childhood sexual abuse, and 86% reported physical abuse (Saxe, van der Kolk,, Berkowitz, Chinman, Hall, Lieberg & Schwartz, 1993). Also, females, on average, tend to experience more invasive forms of sexual abuse, at an earlier age, for longer periods of time, and more often by parental perpetrators than males (Finkelhor, 1984; Garbarino, 1977; Justice & Justice, 1990).

Hypothesis 5: Males physically abused during childhood will be more reliably distinguished from clinical control groups by the dissociation scales, than will be males sexually abused during childhood. On average, physical abuse of male children tends to be perpetrated by parents, to be more severe, occur over longer periods of time, and result in more injuries (Garbarino, 1977; Straus & Donnelly, 1994; Justice & Justice, 1990),

compared with sexual abuse of male children, which more often consists of singular events, is perpetrated by non-family members, and involves less force (Garbarino, 1977; Finkelhor, 1984; Justice & Justice, 1990).

Hypothesis 6: Both the female and mixed-sex multiply traumatized groups will be distinguished from clinical controls by the dissociative scales. Such compounded abuses, experienced for prolonged periods of time during childhood, are thought to result in more complex forms of posttraumatic adjustment (Herman, 1992) and are often observed in clients exhibiting dissociative phenomena (van der Kolk, 1996).

Hypothesis 7: When extent of abuse and perpetrator identity are used to predict variance in Dissociation scores for childhood abuses, more severe abuses, perpetrated by family members, will result in significant elevation of NCDI and PDS, relative to non-abused or less severely abused subjects. Since children are dependent upon parents for attainment of their basic needs, traumas perpetrated by parents are expected to result in more dissociative phenomena than traumas perpetrated by non-family members.

Methods

Subjects

Archival data were collected from 373 outpatients, 176 males and 197 females, who sought services at either the University of Tennessee Student Counseling Center or Psychological Clinics between January 1990 and December 1998. One hundred seventy-six of the subjects presented with a history of physical or sexual abuse and were included in the TRAUMA group. Ninety-nine of these traumatized subjects experienced childhood physical abuse and make-up the CHILD PHYSICAL abuse group; 94 of these subjects

experienced childhood sexual abuse and makeup the CHILD SEXUAL abuse group. Forty-three subjects reported adult physical abuse and twenty subjects reported adult sexual abuse and comprised the ADULT PHYSICAL and ADULT SEXUAL abuse groups, respectively. A large number, 51, of clients reported multiple traumas including both sexual and physical abuse. These clients comprised the MULTIPLE trauma group. The NOT traumatized control group consisted of 196 subjects who did not report any assault trauma experiences. One case was dropped from analyses due to insufficient MMPI-2 scale scoring. See Table 7 for a breakdown of trauma categories by gender.

The TRAUMA and NOT control groups were not distinguished by: ethnic membership ($\chi^2 = .076$, d.f. = 1, $p > 0.5$), marital status ($\chi^2 = 1.24$; d.f. = 2, $p > 0.5$), or income ($\chi^2 = .57$, d.f. = 1, $p > 0.4$). Nor were the traumatized and NOT control groups distinguished by measures of cognitive functioning; WAIS-R Full scale mean group scores (trauma $\bar{X} = 105.04$; control $\bar{X} = 108.97$; $t = 1.15$, d.f. = 105; $p > .253$); or GPA mean group scores (trauma $\bar{X} = 3.07$ & control $\bar{X} = 3.08$; $t = .092$, d.f. = 148, $p > .927$). WAIS-R scores are from Psychology clinic subjects, while the GPA scores are from Student Counseling Center subjects, in cases where such data was available.

Instruments Used and Data Collected

Subjects' MMPI-2 profiles, demographic information and reported abuse history were archival data that had been collected previously as a part of clinical intake procedures and progress notes. MMPI-2 data recorded included scores of: F, posttraumatic stress (PK & PS), dissociation (NDCI & PDS) and clinical (Pd, Pa, & Sc)

scales. Demographic information included age, ethnicity, marital status, SES and GPA or Wechsler Intelligence test scores when such information was available. Additionally, ratings of subjects' perceptions of family relationships, nurturing behaviors, and ability to provide for the subjects' needs were collected via a Family measure used in previous studies. The Family scale is a 5 - point Likert scale that was used by 2 advanced graduate clinical students and 1 counseling psychology graduate student to rate the archival data. Inter-rater reliability for the Family scale was 92% agreement or kappa (k) = .90.

Statistical Methods

Subjects were first separated into a global TRAUMA group based upon history of sexual or physical abuse, versus no reported abuse history. Subjects were secondarily separated into specific abuse type categories: CHILD PHYSICAL, CHILD SEXUAL, ADULT PHYSICAL, ADULT SEXUAL, and MULTIPLE (both physical and sexual) abuse groups. These groups were constructed with the total mixed-sex sample, and for the analyses of gender differences, were separated into single-sex groups. Due to small N, it was not possible to analyze either an ADULT PHYSICAL or ADULT SEXUAL group among males.

Subjects included in the CHILD SEXUAL abuse group presented with a history of either contact or non-contact sexual experiences perpetrated by a person at least 5 years their senior, consistent with definitions outlined by Finkelhor (1986). Subjects included in the CHILD PHYSICAL abuse group reported experiencing non-normative instances of violence, such as acts which are perceived as having a high probability of causing injury, and are outside the limits of culturally sanctioned corporal discipline of children, consistent

with definitions proposed by Strauss and Donnelly (1994). These definitions were also used to rate the extent and severity of the subjects' abuse experiences (ExtCP, ExtCS, ExtAP and ExtAS) as mild, moderate or severe. The relationship of the perpetrator to victim (PerpCP and PerpCS) was scored as follows: father/step-father = 1, mother/step-mother = 2, both parents = 3, siblings = 4, others = 5.

To test for posttraumatic effects on the MMPI-2 validity, posttraumatic stress, and dissociation scales, one-way analysis of variance (ANOVA) tests were conducted on TRAUMA groups and specific abuse subtypes: CHILD SEXUAL (CS), ADULT SEXUAL (AS), CHILD PHYSICAL (CP), ADULT PHYSICAL (AP), and MULTIPLE (MULT) abuse groups. The TRAUMA and MULT groups were compared with the NOT clinical control group, while the other abuse subgroups were contrasted with a 'pooled' control of all other subjects, consisting in each case of both non-traumatized and other abuse type traumatized subjects. The analyses of the three MMPI-2 clinical scales were conducted with multivariate analysis of variance (MANOVA) tests. When main effects of the MANOVA were significant, follow-up one-way ANOVA tests were carried out to determine which scales exhibited significant differences. Follow-up Bonferroni multiple comparison tests were used to compare specific sub-groups. In cases in which homogeneity of variance assumptions of ANOVA or MANOVA tests were violated, Kruskal-Wallis one-way analyses non-parametric procedures were employed.

The initial comparison of the traumatized group with the pure clinical control group allowed exploration of whether the MMPI-2 scales effectively discriminated clients with abuse histories from clinical groups that did not disclose any abuse; the comparison

of the abuse sub-groups with the pooled control allowed for exploration of whether the MMPI-2 scales would distinguish particular types of abuses from the general clinical milieu that includes other abuse groups.

For these analyses all positive cases of the relevant trauma subtype were included to maximize the probability of detecting the impact of the specific independent variable on the MMPI-2 scales. For example, when testing the likelihood that physically abused clients would exhibit significant elevation on a particular MMPI-2 scale, all clients with a history of physical abuse were included in the physical abuse group, including those who had also experienced other types of trauma. Again, this approach was designed to reflect actual clinical settings in which particular abuse types are distinguished against all other client presentations, including those presenting with other types of abuse. So just as clinicians must be able to distinguish client groups presenting with Cyclothymia from all other client groups, including those that present with major depression; clinicians attempt to distinguish dissociative effects in clients with a history of physical abuse from other groups including groups of sexually abused clients that present with similar symptoms. All the analyses above were first conducted on the defined mixed-sex groups. Then the analyses were repeated with both male and female single-sex groups to determine gender differences. The combined-sex analyses allowed for the detection of association of particular scale elevations with trauma in general; the single-sex analyses explored possible gender-specific differences in scale elevations for different types of abuses. Additional ANOVA and MANOVA analyses of the dissociation and clinical scales were conducted with the extent of abuse ratings or perpetrator identity used as the independent factors.

These analyses were an attempt to distinguish particular aspects of traumatic experiences that may be related to the development of dissociative phenomena.

Results

General Trauma Analyses with Mixed-sex Groups

Analyses of Dissociation Scales. In the one-way univariate analyses (ANOVAS) of the dissociation scales, NCDI and PDS, including the combined male and female groups, significant effects due to TRAUMA ($F = 7.93$, $df=1/326$, $p < .01$), CHILD PHYSICAL ($F = 4.01$, $df=1/318$, $p < .05$) and MULTIPLE abuse ($F = 2.99$, $df=3/317$, $p < .05$) were observed for NCDI, consistent with hypothesis #1. Also, as expected, one-way univariate Kruskal-Wallis analyses revealed significant effects due to TRAUMA ($\chi^2 = 7.75$, $df=1$, $p < .01$), CHILD PHYSICAL ($\chi^2 = 4.33$, $df=1$, $p < .05$), and MULTIPLE abuse ($\chi^2 = 8.79$, $df=1$, $p < .05$) for the PDS. Contrary to predictions, the CHILD SEXUAL abuse group did not exhibit significant elevation of either the NCDI ($F = .321$, $df=1/318$, $p > .05$) or the PDS ($F = 1.63$, $df=1/258$, $p > .05$), relative to the NOT control group, but ironically, the ADULT SEXUAL abuse group manifested significant elevation of the PDS scale ($\chi^2 = 5.45$, $df=1$, $p < .05$). The ADULT PHYSICAL group failed to exhibit significant elevations on either scale, also as predicted. The results for analyses of the dissociation scales are in Table 8A. Thus both the NCDI and PDS specifically distinguished the multiply traumatized and child physical abuse groups, consistent with hypothesis #1, but not the adult physical abuse group. These results are consistent with the assumption of hypothesis #1 that dissociative processes are more likely to be manifest

in response to abuses experienced during developmentally vulnerable times or subsequent to more severe, compounded abuses. Inconsistent with this assumption and hypothesis #1 was the failure of both scales to distinguish the child sexual abuse group, and the , significant elevation of the PDS in the adult sexual abuse group.

Validity and Posttraumatic Stress Scale Analyses. In the one-way ANOVAS or Kruskal-Wallis analyses of the validity scale, mixed-sex groups of TRAUMA ($\chi^2 = 10.68$, $df=1$, $p < .01$), CHILD PHYSICAL ($\chi^2 = 17.08$, $df=1$, $p < .01$) CHILD SEXUAL ($\chi^2 = 5.73$, $df=1$, $p < .05$) and MULTIPLE abuse ($\chi^2 = 22.83$, $df=51/190$, $p < .05$) groups exhibited significant elevation of the F scale relative to their respective control groups (Table 8A). These findings were congruent with hypothesis #2 that the trauma groups would generally exhibit heightened stress relative to the clinical control group. But neither the ADULT PHYSICAL ($F = 1.17$, $df=1/362$, $p > .05$) nor ADULT SEXUAL ($\chi^2 = 1.22$, $df=1$, $p > .05$) groups were distinguished from their respective pooled control groups, in opposition to expectations.

Consistent with hypothesis #2, the one-way ANOVAs of the PK and PS posttraumatic scales resulted in significant effects due to TRAUMA ($F = 7.31$, $df=1/357$, $p < .01$; $F = 8.57$, $df=1/357$, $p < .01$, respectively), CHILD PHYSICAL ($F = 11.6$, $df=1/350$, $p < .01$; $F = 12.0$, $df=1/350$, $p < .01$, respectively) and MULTIPLE abuse ($F = 4.44$, $d.f. = 3/349$, $p < .01$; $F = 4.99$, $df=3/349$, $p < .01$, respectively) (Table 8A). Contrary to expectations, no significant effects due to CHILD SEXUAL ($F = .547$, $d.f. = 1/350$, $p > .05$; $F = .441$, $df=1/350$, $p > .05$, respectively), ADULT SEXUAL ($F = .128$,

d.f. = 1/350, $p > .05$; $F = .159$, d.f. = 1/350, $p > .05$), or ADULT PHYSICAL abuse ($F = .094$, $df=1/350$, $p > .05$; $F = .269$, $df=1/350$, $p > .05$) were observed. Thus, not all of the abuse groups were distinguished via the PK and PS scales, as expected in hypothesis # 2 due to the posttraumatic effects reflected in these scales.

Clinical Scale Analyses. In the multivariate analyses of variance (MANOVAS) of the MMPI-2 clinical scales, significant main effects across the abuse groups: TRAUMA ($F = 8.78$, $df=6/355$, $p < .01$), CHILD PHYSICAL ($F = 7.79$, $df=6/354$, $p < .01$), CHILD SEXUAL ($F = 3.28$, $df=6/354$, $p < .01$), ADULT PHYSICAL ($F = 2.66$, $df=6/354$, $p < .05$), and MULTIPLE ($F = 4.06$, $df=18/999$, $p < .01$) abuse were found when these groups were compared to their respective control groups (Table 9). The sole group failing to exhibit significant effects was ADULT SEXUAL ($F = .686$, $df=6/354$, $p > .05$). The follow-up univariate ANOVA (or when appropriate, Kruskal-Wallis) contrasts revealed that all of these groups, except for ADULT PHYSICAL, also exhibited significant elevations of the Pd, Pa, and Sc scales (all p 's $< .01$). The ADULT PHYSICAL abuse group exhibited significantly elevated Pd and Pa (both p 's $< .01$), but not Sc, relative to the pooled control.

For the most part, these findings are consistent with the contention stated in hypothesis #3 that the combined elevation of the Pd, Pa and Sc scales distinguishes posttraumatic distress due to assault traumas experienced at different developmental times. The specificity of the Sc scale among the childhood and multiple abuse groups is also consistent with expectations. The lack of significant findings for the adult sexual abuse group is contrary to hypothesis #3. Inconsistent with hypothesis #3 was the observation of significant elevation of the D, Pt and Ma scales for the CHILD PHYSICAL

abuse group (p 's $< .01$ to $< .05$), and the significant elevation of the Pt scale for TRAUMA ($p < .01$) and MULTIPLE ($p < .05$) abuse groups. These findings contradicted the assumption, stated in hypothesis #3, that the affective disorder symptoms assessed in these scales among the control groups would dilute significant differences on these scales with the abused groups.

Extent of Abuse and Perpetrator Identity. In MANOVAS in which extent of abuse (child physical or sexual and adult physical or sexual) predicted variance in MMPI-2 clinical scales, significant main effects due to extent of abuse were found for childhood physical ($F = 4.49$, $df=15/969$, $p < .01$) and sexual abuse ($F = 2.40$, $df=15/953$, $p < .01$) (Table 10). No significant main effects were observed for either extent of adult physical ($F = 1.35$, $d.f. = 15/961$, $p > .05$) or extent of adult sexual abuse ($F = 1.64$, $df=12/934$, $p > .05$). In follow-up contrasts, both the extent of childhood physical and sexual abuse exhibited significant elevation of the Pd, Pa and Sc scales (p 's range from $< .01$ to $< .05$). More severe childhood physical abuses involving instruments and/or leaving marks or injuries, were associated with significantly higher elevations on all three scales (data not shown).

In MANOVAS using perpetrator identity (child physical or sexual abuse) as independent factors for the clinical scale scores, both perpetrator identity of child physical ($F = 3.52$, $df=15/958$, $p < .01$) and child sexual abuse ($F = 1.75$, $df=15/922$, $p < .05$) exhibited significant main effects. For childhood physical abuse, those having fathers/step-fathers as perpetrators exhibited significantly higher mean scale scores for Pd and Pa (both p 's $< .01$), but not for Sc. Those who experienced both parents as perpetrators manifested

significant elevations of the Pa scale ($p < .01$), relative to the non-abused groups or clients experiencing maternal, extended family, or non-familial abuses. In contrast, perpetrator identity of child sexual abuse exhibited significant elevation on the Pd scale ($p < .01$), and nearly significant elevation on the Pa scale ($p < .053$), but no difference was found on the Sc scale. Follow-up contrasts yielded no specific perpetrator group exhibiting significant scale elevations relative to other perpetrator groups for child sexual abuse.

In one-way ANOVA analyses of the Dissociation scales, both extent ($F = 3.34$, $df=5/252$, $p < .01$) and perpetrator identity ($F = 3.89$, $df=5/249$, $p < .01$) of child physical abuse exhibited significant effects for the PDS, but not the NCDI scale ($F = 1.61$, $df=5/312$, $p > .05$; $F = 1.61$, $d.f. = 5/308$, $p > .05$, respectively). But neither the extent nor perpetrator identity of child sexual abuse exhibited significant elevation on either NCDI ($F = 1.53$, $d.f. = 5/307$, $p > .05$; $F = .985$, $df=5/297$, $p > .05$, respectively) or PDS ($F = 1.04$, $df=5/248$, $p > .05$; $F = .605$, $df=5/240$, $p > .05$, respectively), relative to the control groups.

Interestingly, both the extent of adult sexual and physical abuse exhibited significant elevation on the PDS ($F = 5.84$, $d.f. = 4/254$, $p < .01$; $F = 2.97$, $df=5/250$, $p < .05$, respectively) but not the NCDI scale ($F = 1.25$, $d.f. = 4/314$, $p > .05$; $F = 1.59$, $df=5/310$, $p > .05$, respectively). The significant elevations of the clinical and dissociation scales for the extent and perpetrator identity of the child physical abuse group are consistent with hypothesis #7 that more severe abuses experienced for protracted times, and perpetrated upon by someone for whom subjects rely for basic needs, may be more traumatizing than milder abuses.

The significant main effects due to extent and identity of the perpetrator of child

sexual abuse on clinical scale elevations are consistent, in general, with hypothesis #7 that childhood sexual abuse results in greater maladjustment than adult abuses. But the lack of significant effects for either the extent or the identity of the perpetrator on the Dissociation scales is contrary to hypothesis # 7. Also, the lack of significant differences in the Pa and Sc scale elevations (p 's $> .05$) with various perpetrator identities of child sexual abuse is contrary to this hypothesis, but the significant elevation of the Pd scale ($p < .05$) for perpetrator identity, and the significant elevation all three Pd, Pa and Sc scales (p 's from $< .01$ to $< .05$) for extent of child sexual abuse is consistent with hypothesis #7 that more severe, chronic abuses experienced by family members result in greater deficits in later adjustment.

Analyses of Gender Differences in Posttraumatic Responses on MMPI-2 Scales

Gender Differences in Dissociation Scale Response. In the one-way ANOVAS that used single-sex trauma groups as independent factors, different patterns of dissociative scale elevations distinguished the traumatized groups between the sexes (Table 8B & C). The NCDI scale exhibited significant main effects for only one abuse group, the general male TRAUMA ($F = 4.23$, $df=1/156$, $p < .05$) group. None of the other male, or any female, abuse groups exhibited significant elevation of the NCDI. In contrast, the ANOVAS, or Kruskal-Wallis analyses of the PDS scale resulted in significant effects due to TRAUMA ($\chi^2 = 5.24$, $df=1$, $p < .05$) and ADULT SEXUAL abuse ($\chi^2 = 7.17$, $df=1$, $p < .01$) among the females; while significant effects due to CHILD PHYSICAL ($\chi^2 = 4.19$, $df=1$, $p < .05$) were exhibited among the males. Surprisingly, neither the CHILD SEXUAL nor MULTIPLE abuse groups manifested significant

elevation on either Dissociation scale, relative to the clinical controls, for either sex.

Hypothesis #1, that both the NCDI and PDS would consistently distinguish groups sexually abused during childhood, or multiply abused, from clinical control groups, was not sustained by the findings for either sex. Nor was hypothesis # 4 sustained that the female group sexually abused during childhood would be particularly distinguished on the dissociation scales. The lack of significant elevation on the dissociation scale among these groups is especially surprising, given the greater incidence of dissociative phenomena generally manifest in these groups. Hypothesis # 5 concerning significant elevations of the PDS for the group of males physically abused as children, but not for the males sexually abused as children was supported by the findings. This observation is also congruent with the recognition that since physical abuses perpetrated upon boys tend to be more severe and chronic, than sexual abuse of male children, it may result in more dissociative coping, compared with sexual abuse. The finding of a significant elevation on the PDS scale among the female adult sexually abused group was inconsistent with hypothesis # 1, since this group had experienced more circumscribed traumas, at developmentally mature times, and therefore was expected to have more resources upon which to draw for coping.

Gender Differences in F and Posttraumatic Scales. The general TRAUMA ($F = 4.05$, $df=1/195$, $p < .05$ for females; $\chi^2 = 7.85$, $df=1$, $p < .01$ for males), for both sexes exhibited significant elevations of the F scale, compared with the NOT control (Table 8B & C). Among females, the CHILD SEXUAL ($F = 5.86$, $df=1/188$, $p < .05$), ADULT SEXUAL ($\chi^2 = 4.12$, $df=1$, $p < .05$) and MULTIPLE abuse ($F = 3.81$, $df=3/186$, $p < .01$) groups also exhibited significant elevations on the F scale, but neither the CHILD nor ADULT PHYSICAL group

did so. Among males, the CHILD PHYSICAL ($\chi^2 = 16.83$, $df=1$, $p < .01$) but not CHILD SEXUAL, manifested a significant elevation on the F scale. The hypothesis # 2 that significant elevation on the F scale would distinguish all trauma groups, due to the heightened distress generally associated with posttraumatic responses assessed in this scale, was not supported.

The ANOVAS of the Posttraumatic scales also exhibited gender differences in scale elevation (Table 8B & C). Neither the PK or PS scale distinguished any female abuse groups, but both scales were significantly elevated across the male TRAUMA ($F = 9.69$, $df=1/163$, $p < .01$ for PK; $F = 8.39$, $df=1/163$, $p < .01$ for PS), CHILD PHYSICAL ($F = 11.2$, $df=1/162$, $p < .01$ for PK; $F = 9.83$, $df=1/162$, $p < .01$ for PS), and MULTIPLE abuse ($F = 4.21$, $d.f. = 3/161$, $p < .01$ for PK; $F = 3.92$, $df=3/161$, $p < .01$ for PS) groups. The male CHILD SEXUAL abuse group was not distinguished by either scale. Again, hypothesis #2 that the posttraumatic scales would significantly distinguish all the abuse groups from the clinical control groups was not sustained by the findings of inconsistent posttraumatic scale elevation across the single-sex abuse groups.

Gender Differences in Clinical Scales. In contrast to the other trauma-related MMPI-2 scales, the analyses of the Pd, Pa, and Sc scales exhibit fairly similar patterns of scale elevation across trauma groups (Table 9). Similar to the combined-sex group analyses above, the MANOVAS of the clinical scales among the females revealed significant main effects due to TRAUMA 9F = 7.38, $df=6/184$, $p < .01$), CHILD PHYSICAL ($F = 4.07$, $df=6/184$, $p < .01$), CHILD SEXUAL ($F = 3.28$, $df=6/184$, $p < .01$), ADULT PHYSICAL ($F = 3.27$, $df=6/184$, $p < .01$) and MULTIPLE abuse ($F = 3.32$, $df=18/515$, $p < .01$) groups. The female

ADULT SEXUAL abuse group failed to show any significant effects. Among the males, both the TRAUMA ($F = 2.04$, $df=8/127$, $p < .05$) and CHILD PHYSICAL abuse ($F = 2.79$, $df=8/126$, $p < .01$) groups exhibited significant main effects, but not the CHILD SEXUAL abuse group. In follow-up univariate ANOVA tests, all of the female groups exhibited significant elevations on the Pd, Pa, and Sc scales (p 's range from $p < .01$ to $< .05$), except for the ADULT PHYSICAL abuse group that exhibited significant elevation on Pd and Pa only (both p 's $< .01$). Both the male TRAUMA and CHILD PHYSICAL abuse groups exhibited significant elevation of all three clinical scales (all p 's $< .01$). With the exceptions of the female adult sexual abuse and the male child sexual abuse groups, the significant elevations on the Pd, Pa and Sc scales across the traumatized groups are consistent with hypothesis #3 that presumes that combinations of these scales may reflect posttraumatic processes. The significant elevation on the Sc scale observed in the female and male child physical, as well as the female child sexual and multiple abuse groups is also consistent with this hypothesis. These findings support the postulate that elevation on this scale may reflect coping responses to severe or multiple traumas experienced during developmentally critical times.

Gender Differences in Perpetrator Identity and Extent of Abuse Effects. In MANOVAS of MMPI-2 clinical scales with perpetrator identity and extent of abuse as independent factors, gender differences were observed (Table 10). Among females, the extent of child sexual ($F = 2.08$, $df=15/492$, $p < .01$) and physical abuse ($F = 2.91$, $df=12/482$, $p < .01$) exhibited significant main effects, as well as perpetrator identity of child physical abuse ($F = 2.29$, $df=9/443$, $p < .05$). Among males, both perpetrators of child physical (2.51,

$df=15/439$, $p < .01$) and sexual abuse ($F = 1.88$, $df=12/421$, $p < .05$) exhibited significant main effects, but only the extent of child physical abuse ($F = 2.78$, $df=15/448$, $p < .01$) exhibited significant main effects. Neither extent of adult sexual or physical abuse among females exhibited significant main effects. Table 4 summarizes these results for the clinical scales.

Discussion

Implications for Assessment

For the most part, neither of the Dissociation scales exhibited consistent relationships with those groups most apt to present with dissociative phenomena, namely those groups reporting childhood or multiple abuses. In particular, no significant elevations of NCDI or PDS were associated with childhood sexual abuse for the combined-sex, male, or female groups. The only child sexual abuse variable that was associated with significant elevations of a dissociation scale, PDS, was the extent of child sexual abuse among males. The combined-sex and male child physical abuse groups exhibited significant elevations on the dissociation scales, PDS & NCDI, and PDS only, respectively. The extent and perpetrator identity of child physical abuse among males also accounted for significant elevation of the PDS scale but there were no significant elevations of either Dissociation scale for extent, perpetrator identity, or child physical abuse group membership for females. Although the multiple abuse combined-sex group exhibited significant elevation of both the NCDI and PDS, neither female nor male multiple abuse groups did so.

The inconsistent pattern of Dissociation scale elevations among the childhood and multiply abused groups was contrary to expectations. The experience of sexual, physical

or compounded abuses during developmentally critical times is the most common etiological factor associated with dissociative phenomena (Kroll, 1993; van der Kolk, 1996; Zelikovsky & Lynn, 1994; Maldonado & Spiegel, 1994). Also, the lack of dissociation scale elevations for extent or perpetrator identity of childhood abuses among females is disconcerting, since the majority of outpatients presenting with dissociative processes or disorders are women. Additionally, scores on a more conventional dissociation scale, the DES, are reported to be higher when the trauma involves both physical and sexual abuse or the abuse is perpetrated by a family member (Zelikovsky & Lynn, 1994).

In contrast to expectations, the adult sexual abuse group, as well as extent of both adult sexual and physical abuse, exhibited significant elevations on the PDS scale. Again, this finding was unexpected, since the majority of clients presenting with dissociative-related disorders (BPD, PTSD and DID) report childhood abuses. Although these clients often speak of additional adult traumas, their difficulties are generally attributed to the more pervasive childhood abuses observed among these clinical groups. Some clinicians believe such adult traumas can be re-enactments of the childhood abuses (Gidycz, Nelson & Latham, 1992; Herman, 1992; Terr, 1994). In this study, 35% of female adult abuse subjects also reported childhood abuses. While it is possible that significant elevations on the dissociation scales for the adult sexual group are, in part, related to dissociative coping styles evolving out of prior, childhood abuses, it seems unlikely, since the dissociation scales failed to be so sensitive to childhood sexual abuse responses.

In striking contrast to the dissociation scales, the MMPI-2 clinical scales, Pd, Pa

and Sc, exhibited significant elevations across the multiple and childhood abuse groups, as well as many of the extent of abuse and perpetrator identity variables associated with these groups. In the analyses of the combined-sex, female and male only groups, all three scales were found to be clinically elevated in 10 of the 15 comparisons, with 1-2 scales being significantly elevated in two additional comparisons. Thus only three tests revealed no significant association, compared to the 8 analyses in which both of the dissociative scales failed to exhibit any association. The consistent pattern of heightened Pd, Pa and Sc scales across the childhood and multiply traumatized groups suggests that these scales collectively reflect posttraumatic processes such as mistrustfulness, hypervigilence, and ego dystonic distortions in perceptions that are often observed among severely abused groups.

Curiously, although the clinical scales exhibit significant elevations of Pd and Pa for the combined-sex and female groups of adult physical abuse, no significant scale elevations are exhibited for the adult sexual abuse group, perhaps due to the small size of this group ($n = 19$). The lack of significant clinical scale elevations for extent of either adult abuses may also be attributable to small sample sizes, as well as an indication that abuses experienced in adulthood may be less closely associated with the posttraumatic phenomena tapped by these three scales.

In spite of the small group sizes, the PDS dissociation scale did exhibit significant elevations for the extent of both adult sexual and physical abuse, as well as for membership in the adult sexual abuse groups. These observations suggest that this scale may be more sensitive to a more mature response to recent, circumscribed traumas than

one would expect, given the contention that this scale reflects dissociative processes. It appears that the MMPI-2 clinical scales are more sensitive to abuses experienced for protracted periods of time during developmentally vulnerable times.

A review of the Posttraumatic and validity scale elevations reveals that childhood physical abuse, among the combined-sex and male groups, is detected equally well by the F, PK, PS and PDS scales. Surprisingly, only the F scale distinguishes child sexual abuse groups among the combined-sex and female groups. Neither the posttraumatic nor Dissociation scales detect any childhood sexual abuse groups. The F scale is also most consistent in identifying the multiple abuse group across analyses; the dissociation scales distinguish only the combined-sex multiple abuse group. Conversely, the dissociation scales are more adept at detecting adult sexual abuse, compared with the F scale, which distinguishes adult sexual abuse among females only. None of the scales distinguish adult physical abuse. Thus the dissociation scales are no more specific to childhood or multiple abuse experiences than the general distress, F, or posttraumatic stress scales. The PDS scale does show a greater affinity for adult sexual abuse among females than either the PK or PS posttraumatic stress scales.

Across analyses the MMPI-2 Pd, Pa and Sc scales emerge as being the most consistently associated with multiple and childhood abuses. Although the D, Pt and Ma scales were also significantly elevated for the combined-sex and male child physical abuse groups, these scales failed to exhibit a consistent pattern of elevation across the other trauma groups; with the exception of the elevation of Pt and Ma for the combined-sex trauma group and the elevation of Pt for the combined-sex multiply abused group. These

findings are inconsistent with the hypothesis that significant differences in elevation of these scales between abused and clinical control groups would be diluted by the large numbers of affective disorders present among the control groups. It may be that the larger size of the combined-sex abuse groups, relative to the single-sex abuse groups, allows for the detection of the agitation, depression and anxiety that are often an insidious aspect of posttraumatic phenomena, even given the clinical context of the comparison.

The dissociation scales are no more specific to trauma in general, and childhood abuses in particular, than are any of the MMPI-2 trauma-related scales. Although the dissociation scales were not expected to distinguish as many of the trauma groups as these other scales that are designed to detect more general psychological processes or distress, the dissociation scales were expected to more significantly distinguish those trauma groups generally associated with dissociative phenomena. Neither dissociation scale exhibited such a pattern. In fact, paradoxically, the PDS showed significant sensitivity to adult sexual abuse that was not detected with the other MMPI-2 scales, but failed to distinguish child sexual abuse groups.

These findings do not preclude the accurate detection of Dissociative Disorders among client groups using the Dissociation scales, since the actual diagnoses among these client groups are unknown. But these findings do raise questions about the viability of the NDCI and PDS scales in screening for dissociative processes and disorders among clinical groups, as one would expect clients in the childhood and multiple abuse groups to exhibit more dissociative symptoms than clients experiencing adult assaults. It is possible that what is being reflected in the dissociation scales is not particular to dissociative processes,

per se, but is an expression of more general confusion and distress associated with assault traumas in general. Such scales would be expected to distinguish Dissociative disorder clients, since these clients generally exhibit more extreme forms of distress across the plethora of posttraumatic responses.

Gender Differences in Posttraumatic MMPI-2 Responses

In addition to the gender differences in posttraumatic MMPI-2 profiles above, the consistent and striking differences between the male and female analyses for childhood abuses is illuminating. Although both child sexual and physical abuse groups exhibited significant elevations of the MMPI-2 clinical scales in the combined-sex analyses, the posttraumatic adjustment of these abuse groups emerged as being somewhat different between the males and females. Across trauma-related factors, the most consistently significant findings were for the male childhood physical abuse. The male group physically abused as children exhibited significant elevation of the F, PK, PS and PDS scales, as well as elevations of Pd, Pa and Sc. It was also both the combined-sex and male only groups that were physically abused as children that exhibited significant elevation of the D, Pt and Ma scales, in addition to the Pd, Pa and Sc scales. Additionally, both the extent of physical abuse and a paternal perpetrator were significantly related to elevation of the clinical and the PDS scales for abused males. In contrast, child sexual abuse group membership among males was not associated with any significant scale elevations. Yet, extent of child sexual abuse did exhibit significant elevation of the PDS scale, and perpetrator identity exhibited significant main effects and clinical scale elevations of Pa and Sc.

The physically abused males present as generally more distressed, and as exhibiting a wider array of posttraumatic processes, measured across the clinical, posttraumatic, and presumably dissociation scales, compared with the males abused sexually as children. These findings are consistent with observations that childhood physical abuse of males tends to: be more chronic, result in more injuries, and more often is perpetrated by a parent than childhood sexual abuse of males (Justice & Justice, 1990; Strauss & Donnelly, 1994). Some of the lower scale elevations of the male sexually abused group may be due to the small group size ($N = 22$).

Small group size was not a factor for the females physically abused ($N = 49$), or sexually abused ($N = 61$) as children. But the female childhood physical abuse group failed to show as extensive distress as the males. Although the clinical scales were significantly elevated for female child physical abuse group membership, extent of abuse and perpetrator identity, neither the F, posttraumatic or dissociation scales distinguished this group. The female physically abused group did exhibit similar posttraumatic coping reflected in elevation of the clinical scales as did the male physically abused group, but the female group manifested less general distress. This observation is in keeping with reports that the physical abuse of female children tends to be less severe than that of male children (Strauss & Donnelly, 1994).

In contrast, the female group sexually abused as children exhibited significant elevation of the F, Pd, Pa and Sc clinical scales, but not the PK, PS or PDS scales. Sc was also significantly elevated for extent of sexual abuse among females. Curiously, although females sexually abused as children affirmed higher levels of distress, on average, than

physically abused females, this group did not exhibit the range of posttraumatic elevations of clinical scale responses associated with extent or perpetrator identity that the female physically abused group did. This pattern is inconsistent with the research hypotheses and literature documenting the adverse impact of relatively chronic, invasive forms of childhood sexual abuse, especially when perpetrated by father figures, among females (Browne & Finkelhor, 1986; Kroll, 1993). It may be that among the females in this sample, there was too little variance in perpetrator identity, or in extent of abuse to account for variance in scale elevations.

Additionally, in this study gender differences in MMPI-2 post-assault profiles were also explored. This attempt was somewhat hampered by the small number of males reporting different types of assault experiences. While both males and females sexually or physically abused during childhood, or multiply abused, were consistently distinguished by the Pd, Pa and Sc scale elevations, different patterns in adjustment were observed between the sexes for a given type of abuse. This study broadens the MMPI-2 trauma literature focusing on both dissociative processes and gender differences in posttraumatic adjustment. The focus on outpatient samples precludes the generalization of these findings to other traumatized community populations. Yet, this study does contribute to the small collection of MMPI-2 trauma studies, by further illuminating the associations between the dissociation scales and abuse categories, as well as differences in male and female responding to childhood physical and sexual abuses.

Chapter V

Discussion of MMPI-2 Trauma Studies

Significance of Findings across Studies

Trauma Effects on Adjustment

The three preceding studies were designed to address issues relevant both to assessment of sexual or physical assaults via the MMPI-2, as well as themes in the general trauma literature. Specifically, all three studies explored the posttraumatic adjustment of various groups of abused female and male outpatients, as measured on MMPI-2 scales. The first two studies were designed to explore patterns of clinical scale elevations among abused groups of female or male outpatients, in order to discern whether the combined elevations of the Pd, Pa and Sc scales distinguished traumatized groups from clinical controls. Across female and male abused groups, combinations of the three clinical scales exhibited striking patterns of significant elevations vis a vis the clinical controls

Elevations of Pd, Pa, and Sc scales among various abused groups are documented in the literature (Goldwater & Duffy, 1990; Gregg & Parks, 1995; Tsai, Feldman-Summers & Edgar, 1979; Rosewater, 1988). But findings of previous studies were dubiously interpreted due to small sample sizes employed, failure to employ appropriate control groups, and failure to contrast differentially abused, and male abuse groups. The studies reported herein, of female and male posttraumatic adjustment, were designed to address these issues by contrasting groups abused during differing developmental times, contrasting different categories of abuse, employing clinical and emotional abuse controls, and contrasting groups of $n > 20$. This approach broadened the scope of issues that could

be addressed to include developmental and gender effects on posttraumatic adjustment.

One research question addressed was whether the distress manifest by abused clients is truly specific to posttraumatic phenomena, or more general psychological distress. Indeed, although the abused groups exhibited generally heightened profiles, and relative elevation of a number of clinical scales, compared to the clinical control group, it was the combined Pd, Pa and Sc scales that, for the most part, set the abused groups apart from non-abused, psychologically distressed clients. That is, significant and clinical elevations of Pd, Pa and Sc, were observed among the general trauma, multiple, childhood physical, childhood sexual and adult physical abuse groups, across both mixed-sex and male or female only groups. Review the results of the clinical scale analyses in Tables 1, 2, 4, and 9.

Furthermore, the specificity of these scales to post-assault responses was illuminated by the failure of the female emotionally abused only group to manifest significant Pd, Pa and Sc scale elevations. In contrast, both the female and male groups reporting emotional abuse in addition to physical or sexual assault presented with traumatic profile elevations of Pd, Pa and Sc. Review the results of the emotional abuse effects in Tables 2 and 5. So although the experience of emotional abuse appears to have deleterious effects via depression and low self-esteem, this non-assault type of familial abuse appears not to be sufficient alone to result in the pervasive distress consistent with posttraumatic processes. The presence of an actual assault trauma appears to be an important etiological ingredient. Additionally, the heightened distress of the male group reporting both emotional and assault abuses on the D, Pt, and Ma scales, in addition to the

Pd, Pa and Sc scales, suggests that the experiences of such compounded abuses results in more extreme, pervasive distress.

Developmental Effects

Generally, across the first and last studies, groups abused during childhood, whether physically or sexually, exhibited higher elevations and more extensive distress via the MMPI-2 clinical scales than groups reporting adult abuse. Due to the small number of males that presented with adult assaults, the developmental issues were explored primarily among female clients. Groups of clients that exhibited the highest elevations of the MMPI-2 scales were the multiply, both sexually and physically abused, groups.

Across the studies, it was also the multiply abused and childhood abuse groups that exhibited significant elevations of the Sc scale. Review these findings in Tables 1, 2, 4 and 9. The elevation of the Sc scale has been observed among clients diagnosed with dissociative disorders (Allen & Coyne, 1995; Bliss, 1984; Coons, Bowman & Milstein, 1988; Solomon, 1983), who report severe childhood abuses. Allen & Coyne (1995) found that elevation of Sc scale scores was strongly associated with dissociative processes, such as depersonalization, dissociated states and amnesia; but was even more strongly correlated with more benign dissociative processes such as absorption and imaginative involvement as measured on the Dissociative Experiences Scale (Bernstein & Putnam, 1986). In study 3, elevation of the Sc scale more reliably distinguished multiply and childhood abuse groups than either of the MMPI-2 Dissociation scales. It may be that in contrast to the dissociative scales, that were validated upon Dissociative Disorder subjects, the Sc scale picks up the continuum of dissociative phenomena exhibited by

survivors of assaults.

In spite of developmental differences, adult female groups who had experienced physical battering also were distinguished from clinical controls via the clinical scales. The physically battered women did show a clinical elevation of the Pa scale as hypothesized, but so did the groups abused as children. It may be this scale reflects both acute reactive paranoia due to recent traumatic involvement, as well as a more entrenched mistrustful view of the world developed from chronic abuses. Collectively the three MMPI-2 scales appear to tap posttraumatic processes such as alienation, fear, anxiety, pervasive mistrust, hypervigilance and distorted perceptual and sensory sensations that are associated with both acute and chronic posttraumatic states. The findings of these studies are consistent with trauma-specific responses being expressed along a continuum, with heightened, more intense symptoms being manifest among those severely abused or abused during childhood, and relatively benign variants of posttraumatic distress being exhibited by adult victims. Specifically, the adult victims are less likely than those victimized as children to exhibit perceptual difficulties assessed on the Sc scale.

Family Effects and Posttraumatic Adjustment

An ongoing controversy in the trauma literature is whether the effects observed among abused populations are due to the actual assault experiences, or, rather to the chaotic family environments often associated with childhood abuse. Curiously, this question is most often posed about responses to childhood, but not adult, traumas. An alternative hypothesis is that posttraumatic adjustment may reflect an interaction between both the abuse experience and family factors. The first two studies were designed to

address this issue by including in analyses a Family measure, constructed to rate archival data for subjects' perceptions of the quality of familial relations, and ability of family-of-origin to provide for basic physical and emotional needs. As the vast majority of child abuses are perpetrated in the context of family, it was predicted that analyses involving the family rating as a covariate to abuse groups, would result in a greater diminution of childhood than adult abuse effects on MMPI-2 scales. The results of the MANCOVAS can be reviewed in Tables 1, 2 and 4.

In the multivariate analysis of covariance (MANCOVAS) in which the Family ratings were used as covariates, the main effects due to the general trauma, adult physical and child sexual abuse appeared to be relatively immune to family effects for the female abuse groups (Tables 1 and 2). But both female and male groups reporting child physical abuse exhibited loss of significance due to abuse effects when the family factor was co-analyzed (Tables 1 and 4). These findings suggest that adjustment following childhood physical abuse, in general, may be more fully influenced by pathological family conditions, while childhood sexual abuse after-effects, among females, are more independent of family. Thus the hypotheses that childhood abuse in general would be more greatly influenced by family was confirmed for childhood physical, but not sexual, abuse.

As the majority of childhood abuses are experienced in the context of family, and previous findings (McKee, et al. 1997) indicated that the Family scale is highly correlated with childhood abuses, combined contributions of both family and trauma factors in accounting for variance of posttraumatic MMPI-2 scales were explored via multiple regression analyses. The results of the regression analyses are reviewed in Tables 3 and 6.

In contrast to family covariance studies that are often designed to answer either/or questions concerning whether the etiology of posttraumatic effects is attributable to the abuse or the family; multiple regression analyses, answer the question, how do family and abuse factors contribute mutually and independently to posttraumatic adjustment?

In the multiple regression analyses of male outpatients, both global trauma groups and family ratings were significant predictors in accounting for variances in posttraumatic MMPI-2 scale scores. The importance of exploring both family and abuse factors were most salient in the analyses of childhood physical abuse of males. The results are reviewed in Table 6. When factors such as extent of abuse, perpetrator identity, and observation of violence in one's home, were included in regression equations, appreciably greater amounts of variance were accounted for, 33-46 % in scale scores, compared to averages of 7 % to 10 %, when either family or child physical abuse ratings were used singly as predictor variables across the three scales. Thus, explorations of variables that encompass the impact of both family and abuse experience simultaneously substantiate that both abuse and family factors impact posttraumatic adjustment.

Interestingly, among sexually abused males, variances in MMPI-2 scale scores were better predicted by various combinations of family ratings, emotional abuse, and observation of domestic violence; while variances in child physical abuse group clinical scale scores were better predicted by the perpetrator identity, the extent of the abuse, and observation of parental marital violence (Table 6). These findings suggest that recovery from child sexual abuse, for males, may be more closely related to the quality of one's familial support, than recovery from childhood physical abuse. Recovery from both types

of abuse appears to also be impacted by vicarious traumatization from observation of parental abuses. As many sexual abuses are experienced outside the family, male children so assaulted may more readily perceive their family as a resource, than physically abused males who tend to experience more perpetration within the home. Since sexual abuse among male children, is relatively independent of family, more circumscribed, and less likely to involve injury, than physical abuse, these boys are more apt to experience family as a buffering or exasperating influence in their recovery.

In contrast, the factors that best predicted post-abuse adjustment for males physically abused as children were those in which family and trauma factors are inextricably bound; paternal identity of perpetrator, observation of parent behaving violently toward the other parent, and extent of abuse. Since the majority of perpetrators of physical abuse were parents, these findings are consistent with the view that childhood abuses perpetrated by familial caretakers are more malignant than those perpetrated by non-family. Thus the adjustment of physically abused male youngsters, as they reside with and are dependent upon their abusers, is predicated more upon the intensity of the actual abuse experience involving family, than sexually abused males. Also, as most perpetrators of both domestic violence and child physical abuse were father-figures, males suffering these abuses may exhibit posttraumatic maladjustment more closely tied to their identification with the perpetrator, than males sexually abused as children.

In a different approach, the female multiple regression equations included extent of abuse, emotional abuse and perpetrator identity to predict variance in Family ratings (Table 3). These analyses explored ways in which family factors might mediate abuse

experiences. While perpetrator identity did not impact female family ratings for child physical abuse, it was a significant predictor for child sexual abuse. As most child physical abuse was perpetrated by family members, in this study, there may be little variance in perpetrator identity to impact family ratings for physically abused females. In contrast, child sexual abuse with a wider range of perpetrators, for females, appears to result in more negative perceptions of family in cases of intrafamilial abuse. Also, female children who experience battering by fathers, may be less inclined to experience identification with their perpetrator, than males, so female posttraumatic adjustment may be less closely tied to perpetrator identity in cases of child physical abuse. For both males and females the extent of abuse and the additional presence of emotional abuse appeared to impact post-abuse functioning via either the MMPI-2 scales, or Family ratings, assuming a connection with psychological health and perception of family support.

Additional Similarities and Differences between the Genders' Posttraumatic Responses

For the most part, there were more similarities than differences that emerged in comparisons of female and male MMPI-2 posttraumatic responses. Both male and female traumatized groups were most reliably distinguished by elevation of the Pd, Pa and Sc scales, among the clinical scales. Although the male child sexual abuse group failed to exhibit significant main effects for these scales, all three scales were clinically elevated, relative to the controls, for this group also (Table 4 and Figure 5). Although the general trauma, multiple, and childhood physical abuse groups among males also exhibited significant elevation of the PK and PS scale, the posttraumatic stress scales failed to distinguish any female trauma group (Table 8).

Both groups exhibited modest responding on the Phillips Dissociation scale, with only the general and child physical abuse exhibiting significant elevations among the males, and adult sexual and general trauma exhibiting significant elevations among the females. These results are summarized in Table 8. When the extent of abuse and perpetrator identity factors were used to predict dissociation scale scores, males generally exhibited greater affinity for these scales than females. Abused male groups exhibited elevated PDS scales for extent of childhood physical or sexual abuse, and perpetrator of physical abuse; while only the extent of adult physical or sexual abuse, among females, resulted in elevation of these scales. These findings were contrary to the general hypotheses that groups multiply abused and experiencing childhood abuses would exhibit significant elevations of the dissociation scales, but that groups victimized as adults would not. The combined-sex analyses were more consistent with these hypotheses as one or both of the dissociation scales exhibited significant elevation for both the multiple and childhood physical abuse groups, but not the adult physical abuse group. Ironically, even in the combined-sex analyses the child sexual abuse group was not distinguished by the dissociation scales, but the adult, primarily female, sexual abuse group was.

The variable pattern of elevation of the Posttraumatic stress and Dissociation scales between the sexes is puzzling given the fairly consistent elevation of the three clinical scales that distinguish traumatized groups in both populations. These observations are also inconsistent with the clinical literature documenting that it is females with histories of childhood sexual and physical abuse who are overwhelmingly represented among those clients most often presenting with dissociative phenomena. The affinity of

the traumatized male groups for both the Posttraumatic and Dissociation scales, in this study, suggests that these scales may reflect a particularly masculine response to abuse. The validation studies of the North Carolina and both Posttraumatic scales did involve groups of primarily male veterans with Posttraumatic stress Disorder diagnoses. Some researchers (Bremner, Southwick, Johnson, Yehuda & Charney, 1993; Engel, Engel, Campbell, McFall, Russo, & Katon, 1993) have discovered that veterans with childhood histories of physical abuse are more apt to develop PTSD than those with relatively stable childhoods. Although both the MMPI-2 posttraumatic and dissociation scales appear to be picking up some male abuse experiences, this finding is disappointing. The PDS scale was validated on actual dissociative disordered clients and designed to distinguish such processes, rather than more general posttraumatic distress. The findings from these studies do not support the assumption that the Dissociation scales would be most closely associated with the childhood and multiply abuse, and presumably dissociative groups.

The failure of the dissociation scales in distinguishing either the female childhood or multiply abused groups is contrary to expectations. An explanation maybe that among females, the elevation of the PDS observed for the sexually abused adults, reflects an acute response to stress. The failure of females abused as children to elicit, as a group, significant elevations on this scale may reflect a more entrenched response, as they have become somewhat habituated to their post-abuse coping style. Again this explanation seems at odds with the purported purpose of this scale.

The combined-sex group analyses revealed significant elevations of the F-scale across the general, multiple and both childhood abuse groups, relative to the control

group, with no significant elevation among the adult abuse groups (Table 8). Both the female and male groups exhibited this same pattern of F scale elevation, with the exception that among the childhood abuse groups, only child sexual abuse was elevated for females, and only child physical abuse was elevated for males. Significant main effects due to female child sexual abuse was also observed for the MMPI-2 clinical scales, effects that were invulnerable to family covariate effects (Table 1). These observations support the hypotheses that female clients sexually abused as children would exhibit heightened distress relative to males sexually abused as children. The greater impairment resulting from female childhood sexual victimization is attributable to the more chronic nature, younger average age at onset of abuse, and more invasive forms of abuse experienced generally, by female compared to male sexually abused children (Finkelhor, 1984; Garbarino, 1977; Justice & Justice, 1990). In contrast, the heightened distress of the male, relative to the female, childhood physical abuse group, is also attributable, to the more severe forms and increased injuries experienced, on average, by males, versus females, physically abused as children (Garbarino, 1977; Strauss & Donnelly, 1994).

Although both male and female abuse groups exhibited generally heightened profiles relative to the respective single-sex control groups, there were slight variations between the genders (Figures 1, 2, 3 and 5). Both the female and male abuse groups exhibited relatively elevated group mean scales on Hs, D, Hy, Pd, Pa, Pt and Sc compared to the non-traumatized control groups (Tables 1, 2 and 4). But males, especially those physically abused as children, exhibited a relative clinical elevation of D, that is > 3 points difference, and females exhibited a relative clinical elevation of Hy, compared to the

respective control groups. Both males and female abused groups were distinguished from controls by combinations of significant and clinical elevations of the Pd, Pa and Sc scales.

Interestingly, although both the male and female non-abused control groups presented with appreciably, on average, muted distress relative to the abused groups, they presented somewhat differently from each other. The female non-abused group, presented a mean group 2-7/7-2 codetype, reflecting a depressed, anxious, ruminative state most common among out-patients, in general (Greene, 1991). In contrast, the non-abused males presented a group mean 7-8/8-7, codetype with the third highest mean group elevation on 2. Thus the non-traumatized males presented with more idiosyncratic thought processes than their female counter-parts.

Among the female abused groups the 4-8/8-4 codetype was prevalent, with scales 6 & 7 competing for the third highest scale across most groups. Among the male abused groups the 7-8/8-7 codetypes prevailed, with scales 4 and 6 competing for the third highest elevation across groups. Thus the abused males, on average, presented as exhibiting slightly more ruminations than abused females, which given the presentation of the non-abused male clinical control group may reflect an exacerbation of a more general expression of psychological distress among males. Interestingly, among the abused groups various combinations of elevations of 4, 6, 7, and 8 characterized both males and females. Given the over-all pattern of similarities between the abused versus non-abused groups, irrespective of gender, and the actual small differences in mean group elevations, the abused males and abused females present with mean group profiles more similar to one another, than to their same-sex non-abused controls.

Assessment Issues

Although the combined Pd, Pa and Sc scales exhibit heightened sensitivity for detecting clients with assault histories, these scales were not designed with such a purpose in mind. These three scales were designed to reflect particular attitudes, emotional states, behavioral tendencies and idiosyncratic thought processes. What is reflected in these scales singly are not only specific to posttraumatic processes, but encompass a wider variety of disorders. Even in combination, the elevation of these scales may translate into very different clinical presentations and diagnoses between clients. For instance, the combined elevation of Pa and Sc may reflect the paranoid delusional states of a paranoid schizophrenic, just as easily as the hypervigilance and dissociative phenomena exhibited in Posttraumatic Stress Disorders. Thus the elevation of any combination of these scales alone is insufficient to warrant a diagnosis of or treatment plan predicated upon Posttraumatic stress processes. Clinicians, then, should not presume a history of sexual or physical abuse based upon elevation of these scales solely.

As with any clinical diagnoses, the MMPI-2 should be used in conjunction with multiple sources of data, including the clinical interview reviewing developmental history. The data in these studies do suggest that when a client presents with a history of assault and evidences elevation of these scales, what the client may be affirming is a posttraumatic, rather than classical thought disordered, or delusional response. In such cases more thorough evaluation of the client's phenomenal experience may be warranted to avoid misdiagnoses. Additionally, the elevation of these scales, once a client has independently asserted an abuse history, may reflect the form in which the individual's

posttraumatic response has evolved, and, thus, appropriate treatment strategies.

Conversely, if a client presents with an assault history and elevation of these scales it should not be assumed, a priori, that the profile is merely reflective of posttraumatic adjustment without also ruling out more severe disorders. What elevation of these scales among abused clients does provide is a sort of a clinical flag, that the client may be experiencing posttraumatic, or dissociative, rather than classical psychotic symptoms. Again, it is imperative that the clinician uses this clinical data as any other and evaluates it in the context of other observations.

Likewise the findings of the mean group codetype analyses are not to be used as diagnostic indicators. Within the groups of abused clients there were not only several variants of the 4, 6, 7 & 8 profiles, but many profiles that evidenced clinical elevations on other scales, as well as profiles that presented as within normal bounds. There were also clients within both the female and male control groups that exhibited the characteristic elevations of Pd, Pa and Sc . Although it could be argued that some of these clients may have unreported abuse histories, it is probable several exhibited these elevations due to different etiologies and disorders.

Yet exploration of the group mean codetypes are informative in that they provide a clinical relief map of sorts, in which the specific peak symptoms and complaints of traumatized groups can be distinguished from the more general psychological distress symptoms that provide the background of observations among clinical groups. The ability to detect such distinct clinical patterns is important in early detection and treatment of a variety of disorders. More sophisticated analyses would include identification of various

codetypes reflecting alternate abuse histories or clinical issues.

Follette, Naugle and Follette (1997) employing a cluster analytic procedure, identified 5 distinct codetype clusters among 85 women who reported a history of sexual abuse. The three highest points describing these clusters were: 4-8-3; 6-7-2, 0-4-8, and two groups with 8-7-2. The analyses of these clusters reveals how the prominent 4, 6 & 8 peak scales in the mean group profiles in this study, may breakdown when investigating smaller subgroups of particular abuses, or the heterogeneous presentation of abuse clients. Yet across these groups the prominence of the 8, 6 and 4 scales, in combination with 7, may translate into more shared similarities between clients of different abuse clusters, in terms of clinical presentations, than with clients manifesting the typical 2-7 codetype elevation common among the general outpatient community.

A last assessment issue is the viability of detecting dissociative processes via the MMPI-2. The findings of the last study failed to support that the hypothesis that the Dissociation scales would distinguish those groups thought most likely to express dissociative symptoms. Although the actual numbers of clients experiencing dissociative processes within this clinical sample is unknown, statistically, it was assumed that greater numbers would exist within the multiply and childhood abuse groups, especially among females so abused. Thus, indications of this study are that use of either dissociative scale as a screening instrument for dissociative processes are not warranted.

Limitations of Studies and Suggestions for Future Studies

In the three studies the use of archival, retrospective data introduced limitations. The use of retrospective data was useful in answering the clinical questions addressed, as

all clients presenting with trauma histories, logistically present retrospective to their experience. But the use of retrospective, archival data limited what information could be collected since subjects were no longer available, thus systematic questioning of the presence of abuse history was not possible. The reliance upon archival data that must be scored also increased the risk of obtaining error due to scoring of data, subject self-report and the variances in clinician documentation of abuse experiences. Additionally, the use of archival data limited the amount of family information that could be assessed.

Another limitation of this study was the population surveyed. The three studies were intentionally designed to explore the manifestation of posttraumatic effects among a clinical sample of outpatients. Because all subjects in this study were outpatients, the findings reported herein may not be generalizable to community or inpatient samples. Additionally, all the subjects identified in the abuse groups were self-identified as having been abused. In interpreting the results of these studies, it should be remembered that clients who do not report abuse experiences, but have been abused, were not identified, and may present, as a group, with a different clinical presentation. Also, the clinical samples described within these studies are from three mental health clinics situated upon a state university campus. Although one of the clinics services a diverse population of clients from the surrounding community, for the most part, subjects in this study may represent the more highly functioning college students that make up the majority of this sample, than is expected in community mental health outpatient samples.

It is also important to remember that the studies described herein are correlational, and not experimental studies. Thus, the findings reported are descriptive in nature, and

thus, do not address issues of etiology or causality. From these limited findings it cannot be presumed that when clients present with both an abuse history and posttraumatic distress on the MMPI-2, that the trauma experience was causal to later manifestation of symptoms. The finding of distinct patterns of posttraumatic distress via the MMPI-2 clinical scales is consistent with a growing body of MMPI-2 trauma literature documenting such trends.

In combination these three studies make a modest, but constructive, contribution to the MMPI-2 trauma literature. Along with reported findings these studies illuminated problematic areas for future studies. Although the second and third studies remedied the absence of MMPI-2 trauma studies addressing the posttraumatic adjustment of males, the small number of males reporting different types of adult assault precluded a full exploration of developmental issues related to adjustment following different types of assault. These issues need to be explored via samples including larger numbers of males reporting childhood abuse, as well as both adult sexual and physical assaults. As males may generally be less inclined to spontaneously volunteer such information, even in a clinical setting, future studies may need to employ a design in which information is actively solicited.

Interestingly, small N was also a difficulty with the female adult sexual abuse/assault category in this study. This may be an anomaly of this particular clinical sample. The clinics from which these data were collected co-exist in a community with a well-established non-profit organization that delivers services to victims of sexual abuse or assault. It may be that women presenting with more acute crises are more routinely

referred to this clinic for services than are women with childhood abuse histories, which at least initially, may present as less distressed. Future studies including appropriate clinical controls and larger N would enhance our understanding how female victims in acute stages of posttraumatic stress present relative to other clinical groups.

Within these studies, an exploratory attempt was made to distinguish between assault and emotional traumas by contrasting groups of subjects self-identified as emotionally abused by their parents. The findings for females suggest that emotional abuse, singly, does not result in elevation of the Pd, Pa and Sc scales that characterized the abused groups. For both males and females the findings of the study support the view that when emotional abuse is experienced in conjunction with physical or sexual abuse, posttraumatic adjustment result in more pervasive, heightened distress. Yet these findings were at variance with one other study described within studies 1 and 2. A shortcoming of this study, based upon archival data, is that the presence of emotional abuse was based upon subjective self-reports. As a large percent of physical abuse is apt to include emotional abuse this sampling technique may represent an under-reporting of emotional abuse. Also, those subjects who did recognize the emotional abuse may be a select group who experienced more extreme versions of derogatory treatment. Although this study is helpful in initiating the study of emotional versus assault traumas, further studies should pursue the question of the relationship between emotional and assault family-based abuses by employing methods that more accurately survey for the presence of emotional abuse.

Another issue explored in the three studies was the relative contribution of family versus abuse in later maladjustment. Both multivariate analyses of covariance with the

family measure as a covariate and regression analyses that explored the relationship between abuse and family factors were employed. What emerged from these analyses was the observation that for childhood abuses family and abuse variables appear to be interwoven. Thus studies that compartmentalize abuse and family into global variables and are designed to answer either or questions as to etiology of later distress may fail to appreciate the contextual reality of most childhood abuses.

Future studies, investigating overlapping family and abuse variables may provide a more accurate, realistic portrait of the causes of posttraumatic distress among populations abused as children. Such approaches may reveal, as did the studies above, that different types of abuses and posttraumatic symptoms are related in different ways to family and abuse variables. In one such study, victims' self-reports of depression and anxiety were related to lack of perceived support from non-offending parents, whereas parents' reports of victim anxiety were related to incest (Spaccarelli & Fuchs, 1997).

Such approaches appear to more fully reflect the phenomenal and human experience of abused children, who unlike social scientists, are destined to respond holistically to a myriad of environmental influences.

The Family measure employed in this study was significantly related to abuse experience, among childhood abuses. It is logical that the experience of childhood abuse would impact perceptions of family and both negative perceptions of family and abuse would be related to maladjustment. But it can be argued that retrospective perceptions may not fully tap the dynamics of various types of family dysfunction. The use of retrospective reports of family experience also introduced greater possible error due to

variances in memory of experiences rather than actual family environments. Another possible limitation to the use of the Family measure is that it may to treat all dysfunctional families as dysfunctional in the same way. Future studies might enlighten us as to how families of clients presenting with various types of abuse histories differ from those presenting without trauma, and from one another, by developing ways to measure a variety of specific family interactions and functions. It may be that a further complication to the abuse versus family debate is that dysfunctional families in which various abuses occur are malignant in diverse ways.

Another limitation of this study was that the actual numbers of clients with dissociative disorders could not be identified from the available archival data. Thus the failure of the Dissociation scales to detect particular groups might be due to the absence of dissociative symptoms among this particular population of clients. It may also be that the strength of the Dissociation scales is not in screening, but in affirming clinical hunches. If this is so, than these scales may be best used when the clinician expects, and wants confirmation, that clients are experiencing dissociative processes, much as the Millon Multiaxial Clinical Inventory is used to explore Axis II diagnoses. Before this can be assumed, more studies confirming the ability of these scales to distinguish Dissociative Disorders are needed. Additionally, studies exploring the range of dissociative processes evidenced in elevation of these scales should also be conducted. It may be that these scales are so refined that they pick up only the most severe dissociative processes. It may be that the traditional Sc scale is more competent in reflecting a wider range of dissociative phenomena. To determine if this is so, more studies should be conducted

comparing the ability of these two scales to distinguish clients exhibiting various dissociative phenomena.

Speculation

Another void in the MMPI-2 trauma literature is a full exploration of the relationship between childhood victimization and subsequent perpetrator status. Of the abused subjects in this study 7 of the males, but none of the females reported perpetrating violence. Most of the previous MMPI-2 male trauma studies have explored criminals, rather than victims. A long-time puzzling finding of criminal studies is that while significant elevations of various combinations of MMPI-2 scales distinguish criminal populations, these same scales serve as poor predictors of offending behaviors, as the profiles of offenders are generally quite diverse. Various combinations of the Pd, Pa, Sc and Ma scales have been found to distinguish male sex offenders, and child abusers (Herkov, et al 1996; Yanagida & Ching, 1994). Interestingly, in contrast to the non-traumatized control group, the abused males in this sample also showed significant elevation of the Pd, Pa, and Sc scales. Among offending populations there is a high prevalence of a history of childhood sexual abuse (Bagely, et al 1994; Freund & Kuban, 1994). Perhaps the significant elevation of these scales among studies of criminals reflects a history of childhood trauma, rather than an actual predictable propensity to offend. If this is so, the significant elevation of these scales merely reflects the significant subset of offenders who share a common history of childhood abuse. Further studies in which these dependent variables are explored in the context of family history should be conducted, but with the cautious reminder that not all abused children grow up to perpetuate abuses.

Lastly, consistent with the trauma literature in general, and the MMPI-2 trauma literature specifically, what types of characterological or environmental factors may promote psychological health in victims of assault were not addressed. Although large numbers of clients report distress connected to past abuse experiences, findings reported in the literature reveal that about 1/3 of abused children do not exhibit any symptoms (Finkelhor, Hotaling, Lewis & Smith, 1990). The study of resilience among survivors of abuse might further our understanding of how to assist those who are less fortunate. In a study of resilience in adult survivors of sexual abuse, Liem, James, O'Toole and Boudewyn (1997) reported that the more resilient subjects reported fewer family stressors such as parental divorce, loss or illness, as well as more social support resources during childhood. But these resilient subjects also described less forceful abuse experiences, and reported more temporally remote abuse experiences, hence they had, on average, greater periods of post-abuse recovery time. Thus the interaction of family and abuse factors appears to be inter-related in healthy as well as maladaptive adjustment.

LIST OF REFERENCES

References

- Allen, J., & Coyne, L. (1995). Dissociation and vulnerability to psychotic experience. Journal of Nervous and Mental Disease, 183, 615-622.
- American Psychiatric Association. (1994). Diagnostic & statistical manual of mental disorders, (4th ed.): DSM-IV. Washington, D.C.: R.R. Donnelly & Sons Company.
- Andrews, B. (1997). Bodily shame in relation to abuse in childhood and bulimia: A preliminary investigation. British Journal of Clinical Psychology, 36, 41-49.
- Archer, R.P., Griffen, R., & Aiduk, R. (1995). MMPI-2 clinical correlates for ten common codes. Journal of Personality Assessment, 65, 391-407.
- Bagley, C., Wood, M., & Young, L. (1994). Victim to abuser: Mental health and behavioral sequels of child sexual abuse in a community sample of young adult males. Child Abuse & Neglect, 18, 683-697.
- Baum, M.S., Hosford, R.E., & Moss, C.S. (1984). Predicting violent behavior within a medium security correctional setting. International Journal of Eclectic Psychotherapy, 3, 18-24.
- Benedict, L., & Zautra, A. (1993). Family environmental characteristics as risk factors for childhood sexual abuse. Journal of Clinical Child Psychology, 22, 365-374.
- Bernstein, E., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. Journal of Nervous and Mental Disease, 174, 727-735.
- Bliss, E.L. (1984). A symptom profile of patients with multiple personalities, including MMPI results. Journal of Nervous and Mental Disease, 172, 197-202.
- Bliss, E.L., & Larson, E.M. (1985). Sexual criminality and hypnotizability. Journal

of Nervous and Mental Disease, 171, 197-202.

Boney-McCoy, S., & Finkelhor, D. (1996). Psychosocial sequelae of violent victimization in a national youth sample. Journal of Consulting and Clinical Psychology, 63, 726-736.

Braver, M., Bumberry, J., Green, K., & Rawson, R. (1992). Childhood abuse and current psychological functioning in a university counseling center population. Journal of Counseling Psychology, 2, 252-257.

Bremner, J.D., Southwick, S.M., Johnson, D.R., Charney, D.S., & Yehuda, R. (1993). Childhood physical abuse and combat-related posttraumatic stress disorder in Vietnam veterans. American Journal of Psychiatry, 150, 235-239.

Briere, J. (1988). Controlling for family variables in abuse effects research: A critique of the "partialling" approach. Journal of Interpersonal Violence, 3, 80-89.

Briere, J. (1989). Therapy for adults molested as children: Beyond survival. New York, NY: Springer Publishing Company.

Briere, J. (1992). Methodological issues in the study of sexual abuse effects. Journal of Consulting and Clinical Psychology, 60, 196-203.

Briere, J., & Elliott, D. (1993). Sexual abuse, family environment and psychological symptoms: On the validity of statistical control. Journal of Consulting and Clinical Psychology, 61, 284-288.

Brophy, A.L. (1997). Note on an MMPI-2 scale of early sexual abuse. Psychological Reports, 81, 752-754.

Brown, P. (1994). Toward a psychobiological model of dissociation and Post-

traumatic Stress Disorder. In S.J. Lynn & J.W. Rhue's Dissociation: Clinical and theoretical perspectives. New York, NY: Guilford Press.

Browne, A., & Finkelhor, D. (1986). Impact of child sexual abuse: A review of the research. Psychological Bulletin, 99, 66-77.

Bulik, C.M., Sullivan, P.F., & Rorty, M. (1989). Childhood sexual abuse in women with bulimia. Journal of Clinical Psychiatry, 50, 460-464.

Carlson, E.B., & Armstrong, J. (1994). The diagnosis and treatment of Dissociative Disorders. In S.J. Lynn & J.W. Rhue's Dissociation: Clinical and theoretical perspectives. New York, NY: Guilford Press.

Chandler, R.K., & Jackson, J.L. (1997). Family environment and childhood sexual victimization: A test of the buffering hypothesis. Journal of Interpersonal Violence, 12, 3-17.

Claussen, A.H., & Crittenden, P.M. (1991). Physical and Psychological Maltreatment: Relations among types of maltreatment. Child Abuse and Neglect, 15, 5-18.

Coleman, F., & Frick, P. (1994). MMPI-2 profiles of adult children of alcoholics. Journal of Clinical Psychology, 50, 446-453.

Collings, S. (1995). The long-term effects of contact and noncontact forms of child sexual abuse in a sample of university of men. Child Abuse & Neglect, 19, 1-6.

Coons, P.M., Bowman, M.D., & Milstein, V. (1988). Multiple Personality Disorder: A clinical investigation of fifty cases. Journal of Nervous and Mental Disease, 176, 519-527.

Coons, P.M., & Sterne, A.L. (1986). Initial and follow-up psychological testing on a group of patients with multiple personality disorder. Psychological Reports, 58, 43-49.

Coulborn Faller, K. (1989). Why sexual abuse?: An exploration of the intergenerations hypothesis. Child Abuse & Neglect, 13, 543-548.

Courtois, H. (1988). Healing the incest wound. New York, NY: W.W. Norton & Company.

De Young, M. (1982). The sexual victimization of children. Jefferson, NC: McFarland.

Dwyer, S., Rosser, B.R., & Sawyer, S. (1992). Dissociative experiences of sexual offenders. Journal of Offender Rehabilitation, 18, 49-58.

Edwards, P.W., & Donaldson, M.A. (1989). Assessment of symptoms in adult survivors of incest: A factor analytic study of the responses to childhood incest questionnaire. Child Abuse and Neglect, 13, 101-110.

Ellason, J., & Ross, C. (1995). Positive and Negative symptoms in Dissociative Identity Disorder and Schizophrenia: A comparative analysis. Journal of Nervous and Mental Disease, 183, 236-240.

Ellason, J., & Ross, C. (1996). Millon Clinical Multiaxial Inventory-II follow-up of patients with Dissociative Identity Disorder. Psychological Reports, 78, 707-716.

Ellason, J., & Ross, C. (1997). Two-year follow-up of inpatients with Dissociative Identity Disorder. American Journal of Psychiatry, 154, 832-839.

Engel, C.C., Engel, A., Campbell, S.J., McFall, M.E., Russo, J., & Katon, W.

(1993). Posttraumatic stress disorder symptoms and physical abuse in desert storm veterans. Journal of Nervous and Mental Disease, 181, 683- 688.

Faust, J., Runyon, M.K., & Kenny, M. C. (1995). Family variables associated with the onset and impact of intrafamilial childhood sexual abuse. Clinical Psychology Review, 15, 443-456.

Finkelhor, D. (1979). Sexually victimized children. New York, NY: Free Press.

Finkelhor, D. (1984). Child Sexual Abuse: New theory and research. New York, NY: Free Press.

Finkelhor, D., Hotaling, G., Lewis, I.A., & Smith, C. (1990). Sexual abuse in a national survey of adult men and women: Prevalence, characteristics and risk factors. Child Abuse & Neglect, 14, 19-28.

Follette, W.C., Naugle, A.E., & Follette, V.M. (1997). MMPI-2 profiles of adult women with child sexual abuse histories: Cluster-analytic findings. Journal of Consulting and Clinical Psychology, 65, 858-866.

Freund, K., & Kuban, M. (1994). The basis of the abused abuser theory of pedophilia: A further elaboration on an earlier study. Archives of Sexual Behavior, 23, 553-563.

Fromuth, M. E. (1986). The relationship of childhood sexual abuse with later psychological and sexual adjustment in a sample of college women. Child Abuse & Neglect, 10, 5-16.

Fromuth, M.E., & Burkhart, B. (1989). Long-term psychological correlates of childhood sexual abuse in two samples of college men. Child Abuse & Neglect, 13, 533-

542.

Gable, S., & Handler, L. (1995). Effectiveness of the Rorschach and the MMPI-2 in detecting PTSD. Paper presented at the Society of Personality Assessment, Boston, MA.

Garbarino, J. (1977). The human ecology of child maltreatment: A conceptual model for research. Journal of Marriage and the Family, 39, 721-735.

Gelles, R.J. (1993). Family violence. In R.L. Hampton, T.P. Gulotta, G.R. Adams, Earl H. Potter III & R.P. Weissberg's Family violence: Prevention and treatment. Newbury Park, California: Sage Press.

Gerstein, L.H., & Briggs, J.R. (1993). Psychological and Sociobiological discriminants of violent and nonviolent serious juvenile offenders. Journal of Addiction and Offender Counseling, 14, 2-13.

Gil, D.G. (1970). Violence against children: Physical abuse in the United States. Cambridge, MA: Harvard University Press.

Goldwater, L., & Duffy, J. (1990). Use of the MMPI to uncover histories of child abuse in adult female psychiatric patients. Journal of Clinical Psychology, 46, 392-398.

Greene, R. (1991). MMPI-2/MMPI: An interpretive manual. Boston, MA: Allyn and Bacon.

Gregg, G. R., & Parks, E. D. (1995). Selected Minnesota Multiphasic Personality Inventory-2 scales for identifying women with a history of sexual abuse. Journal of Nervous and Mental Disease, 183, 52-56.

Griffiths, P.L., Myers, R.W., Cusick, G.M., & Tankersley, M.J. (1997). MMPI-2

profiles of women differing in sexual abuse history and sexual orientation. Journal of Clinical Psychology, 53, 791-800.

Griffiths, P.L., Myers, R.W., & Tankersly, M.J. (1996). MMPI-2 items which correctly identified women with histories of childhood sexual abuse. Psychological Reports, 78, 717-722.

Gruber, , K. & Jones, R. (1983). Identifying determinants of risk of sexual victimization of youth. Child Abuse & Neglect, 7, 17-24.

Hastings, T., & Kern, J.M. (1994). Relationships between bulimia, childhood sexual abuse and family environment. International Journal of Eating Disorders, 15, 103-111.

Herkov, M.J., Gynther, M.D., Thomas, S., & Myers, W.C. (1996). MMPI differences among adolescent inpatients, rapists, sodomists, and sexual abusers. Journal of Personality assessment, 66, 81-90.

Herman, L. (1992). Trauma and recovery. New York, NY: Harper Collins Publishers, Inc.

Herman, J.L., Perry, J.C., & van der Kolk, B.A. (1989). Childhood trauma in Borderline Personality Disorder. American Journal of Psychiatry, 146, 490-495.

Holcomb, W.R., Adams, N.A., & Ponder, H.M. (1985). The development of cross-validation of an MMPI-2 typology of murders. Journal of Personality Assessment, 49, 240-244.

Ingram, K.M., Corning, A.F., & Schmidt, L.D. (1996). The relationship of victimization experiences to psychological well-being among homeless women and low-

income housing women. Journal of Counseling Psychology, 43, 218-227.

Justice, B., & Justice, R. (1990). *The Abusing family: Revised edition*. New York, NY: Plenum Press.

Kaufman, J., & Zigler, E. (1987). Do abused children become abusive parents? American Journal of Orthopsychiatry, 57, 186-192.

Kern, J.M., & Hastings, T. (1995). Differential family environments of bulimics and victims of childhood sexual abuse: Achievement orientation. Journal of Clinical Psychology, 51, 499-506.

Khan, H. I., Welch, T. L., & Zillmer, E.A. (1993). MMPI-2 profiles of battered women in transition. Journal of Personality Assessment, 60, 100-111.

Kirby, J.S., Chu, J.A., & Dill, D.L. (1993). Correlates of dissociative symptomatology in patients with physical and sexual abuse histories. Comprehensive Psychiatry, 34, 258-263.

Korbanka, J.E. (1997). An MMPI-2 scale to identify history of sexual abuse. Psychological Reports, 81, 979-990.

Koss, M. P., & Oros, C. J. (1982). Sexual Experiences Survey: A research instrument investigating sexual aggression and victimization. Journal of Consulting and Clinical Psychology, 50, 455-457.

Kroll, J. (1993). *PTSD/Borderlines in therapy: Finding the balance*. New York, NY: W.W. Norton & Company, Inc.

Layman, M.J., Gidycz, C.A., & Lynn, S.J. (1996). Unacknowledged versus acknowledged rape victims: Situational factors and posttraumatic stress. Journal of

Abnormal Psychology, 105, 124-131.

Liem, J.H., James, J.B., O'Toole, J.G., & Boudewyn, A.C. (1997). Assessing resilience in adults with histories of childhood sexual abuse. American Journal of Orthopsychiatry, 67, 594-606.

Long, P.J., & Jackson, J.L. (1994). Childhood sexual abuse: An examination of family functioning. Journal of Interpersonal Violence, 9, 270-277.

Lopez, M.A. & Heffer, R.W. (1998). Self-concept and social competence of university student victims of childhood physical abuse. Child Abuse and Neglect, 22, 183-195.

Maldonado, J.R., & Spiegel, D. (1994). The treatment of post-traumatic stress disorder. In S.J. Lynn & J.W. Rhue's Dissociation: Clinical and theoretical perspectives. New York, NY: Guilford Press.

Mallinckrodt, B., McCreary, B. A., & Robertson, A.K. (1995). Co-occurrence of eating disorders and incest: The role of attachment, family environment, and social competencies. Journal of Counseling Psychology, 42, 178-186.

Mancini, C. Nan Amerigen, M., & Macmillan, H. (1995). Relationship of childhood sexual and physical abuse to anxiety disorders. Journal of Nervous and Mental Diseases, 183, 309-314.

Mann, B. (1995). The North Carolina Index: A measure of dissociation using items from the MMPI-2. Journal of Personality Assessment, 64, 349-359.

Mann, J., Stenning, W., & Borman, C. (1992). The utility of the MMPI-2 with pedophiles. Journal of Offender Rehabilitation, 18, 59-74.

McKee, A., King, B., Strassle, C., Klukken, G., & Handler, L. (1998). MMPI-2 and posttraumatic effects of abuse among male outpatients. Paper presented at the 1998 Society for Personality Assessment Meeting in Boston, MA.

McKee, A., King, B., Strassle, C., Benoit, B., Church, S., Klukken, G., & Handler, L. (1997). The manifestation of posttraumatic effects on the MMPI-2. Paper presented at the 1997 Society for Personality Assessment Meeting in San Diego, CA.

McMillen, C., Zuravin, S., & Rideout, G. (1995). Journal of Consulting and Clinical Psychology, 63, 1037-1043.

McNulty, G. (1997). An interim report on the development of the psychological trauma and resources scale. Psychological Reports, 80, 819-831.

Mian, M., Marton, P., & LeBaron, D. (1996). The effects of sexual abuse on 3- to 5- year-old girls. Child Abuse and Neglect, 20, 731-745.

Morrow, S.L., & Smith, M.L. (1995). Constructions of survival and coping by women who have survived childhood sexual abuse. Journal of Counseling Psychology, 42, 24-33.

Mrazek, P.J., & Mrazek, D.S. (1987). Resilience in child maltreatment victims: A conceptual exploration. Child abuse & Neglect, 11, 357-366.

Nash, M. R, Hulsey, T. L., Sexton, M. C., Harralson, T. L., & Lambert, W. (1993). Long-term sequelae of childhood sexual abuse: Perceived family environment, psychopathology and dissociation. Journal of Consulting and Clinical Psychology, 61, 276-283.

Noblitt, J.R. (1995). Psychometric measures of trauma among psychiatric patients

reporting ritual abuse. Psychological Reports, 77, 743-747.

Olivardia, R., Pope, H. G., Mangweth, B., & Hudson, J.I. (1995). Eating disorders in college men. American Journal of Psychiatry, 152, 1279-1285.

Phillips, D.W. (1994). Initial development and validation of the Phillips Dissociation scale (PDS) of the MMPI. Dissociation Progress in the Dissociation Disorders, 7, 92-100.

Pribor, E. F., Yutzy, S. H., Dean, J. T., & Wetzel, R. D. (1993). American Journal of Psychiatry, 10, 1507-1511.

Putnam, F. W. (1989). Etiology, Epidemiology, and Phenomenology. In F. W. Putnam's Diagnosis and treatment of Multiple Personality Disorder. New York, NY: The Guilford Press.

Putnam, F.W., Carlson, E.B., Ross, C., Anderson, G., Clark, P., Torem, M., Bowman, E.S., Coons, P., Chu, J.A., Dill, D.L., Loewenstein, R.J., & Bran, B.G. (1996). Patterns of dissociation in clinical and non-clinical samples. Journal of Nervous and Mental Disease, 184, 673-679.

Ray, K.C., Jackson, J.L., & Townsley, R.M. (1991). Family environments of victims of intrafamilial and extrafamilial child sexual abuse. Journal of Family Violence, 6, 365-374.

Read, J. (1997). Child abuse and psychosis: A literature review and implications for professional practice. Professional Psychology, Research and Practice, 28, 448-456.

Resnick, H.S., Kilpatrick, D.G., Dansky, B.S., Saunders, B.E., & Best, C. L. (1993). Prevalence of civilian trauma and Posttraumatic Stress Disorder in a

representative national sample of women. Journal of Consulting and Clinical Psychology, 61, 984-991.

Rhodes, N.R., (1992). Comparison of MMPI psychopathic deviate scores of battered and non-battered women. Journal of Family Violence, 7, 297-307.

Rodriguez, N., Ryan, S.W., Vande Kamp, H., & Foy, D.W. (1997). Posttraumatic Stress Disorder in adult female survivors of childhood sexual abuse: A comparison study. Journal of Consulting and Clinical Psychology, 65, 53-59.

Roesler, T.A., & McKenzie, N. (1994). Effects of childhood trauma on psychological functioning in adults sexually abused as children. Journal of Nervous and Mental Disease, 182, 145-150.

Rosewater, L. B. (1988). Battered or schizophrenic? Psychological tests can't tell. In K. Yllo & M. Bogard (Eds.), Feminist perspectives on wife abuse. Newbury Park, CA: Sage.

Ross, C.(1989). Multiple Personality Disorder: Diagnosis, clinical features and treatment. New York, NY: John Wiley & Sons.

Russell, D.E.H.(1984). Sexual exploitation: Rape, child sexual abuse and workplace harassment. Beverly Hills, CA: Sage Publications.

Saxe, G.N., van der Kolk, B.A., Berkowitz, R., Chinman, G., Hall, K., Lieberg, G., & Schwartz, J. (1993). Dissociative disorders in psychiatric inpatients. American Journal of Psychiatry, 150, 1037-1042.

Schulte, J.G., Dinwiddle, S.H., Pribor, E.F., & Yutzy, S.H. (1994). Psychiatric diagnoses of adult male victims of childhood sexual abuse. Journal of Nervous and

Mental Disease, 182, 111-113.

Scott, R. L., & Stone, D. A. (1986). MMPI measures of psychological disturbance in adolescent and adult victims of father-daughter incest. Journal of Clinical Psychology, 42, 251-259.

Snyder, S., Pitts, W.M., & Goodpaster, W.A. (1984). Family structure as recalled by borderline patients. Psychopathology, 17, 90-97.

Solomon, R. (1983). Use of the MMPI with multiple personality patients. Psychological Reports, 53, 1004-1006.

Spaccarelli, S., & Fuchs, C. (1997). Variability in symptom expression among sexually abused girls: Developing multivariate methods. Journal of Clinical Child Psychology, 26, 24-35.

Starr, R.H., Jr., MacLean, D.J., & Keating, D.P. (1991). Life-span developmental outcomes of child maltreatment. In R.H. Starr, Jr. & D.A. Wolfe's The effects of child abuse and neglect. New York, NY: The Guilford Press.

Straus, M. (1991). Discipline and deviance: Physical punishment of children and violence and other crime in adulthood. Social Problems, 38, 101-123.

Straus, M., & Donnelly, D. (1994). Beating the Devil out of them. New York, NY: Free Press.

Terr, L.C. (1991). Childhood traumas: An outline and overview. American Journal of Psychiatry, 148, 10-20.

Terr, L. C. (1994). Unchained memories: True stories of traumatic memories, lost and found. New York, NY: Basic Books.

- Tsai, M., Feldman-Summers, S., & Edgar, M. (1979). Childhood molestation: Variables related to differential impacts on psychosexual functioning in adult women. Journal of Abnormal Psychology, 88, 407-417.
- van der Kolk, B.A. (1996). Trauma and memory. In B.A. van der Kolk, A.C. McFarlane, & L. Weisaeth's Traumatic stress: The effects of overwhelming experience on mind, body, and society. New York, NY: Guilford Press.
- van der Kolk, B.A., Perry, C., & Herman, J.L. (1991). Childhood origins of self-destructive behavior. American Journal of Psychiatry, 148, 1665-1671.
- Waldinger, R.J., Swett, C., Frank, A., & Miller, K. (1994). Levels of dissociation and histories of reported abuse among women outpatients. Journal of Nervous and Mental Disease, 182, 625-630.
- Walker, L.(1980). Battered women. In A. M. Brodsky & R. T. Hare-Mustin 's Women and psychotherapy: An assessment of research and practice. New York, NY: The Guilford Press.
- Weaver, T.L. & Clum, G.A. (1993). Early family environments and traumatic experiences associated with borderline personality disorder. Journal of Consulting and Clinical Psychology, 61, 1068-1075.
- Whiffen, V.E., & Clark, S.E. (1997). Does victimization account for differences in depressive symptoms? British Journal of Clinical Psychology, 36, 184-193.
- Wyatt, G. E., Guthrie, D. & Notgrass, C.M. (1992). Differential effects of women's child sexual abuse and subsequent revictimization. Journal of Consulting and Clinical Psychology, 2, 167-173.

Yama, M.F., Tovey, S.L., & Fogas, B.S. (1993). Childhood family environment and sexual abuse as predictors of anxiety and depression in adult women. American Journal of Orthopsychiatry, 63, 136-141.

Yanagida, E.H., & Ching, J.W. (1994). MMPI profiles of child abusers. Journal of Clinical Psychology, 50, 569-575.

Zelikovsky, N., & Lynn, S.J. (1994). The aftereffects and assessment of physical and psychological abuse. In S.J. Lynn & J.W. Rhue's Dissociation: Clinical and theoretical perspectives. New York, NY: Guilford Press.

Zlotnick, C., Begin, A., Shea, T., Pearlstein, T., Simpson, E., & Costello, E. (1994). The relationship between characteristics of sexual abuse and dissociative experiences. Comprehensive psychiatry, 35, 465-470.

Zlotnick, C., Warshaw, M., Shea, T., & Keller, M.B. (1997). Trauma and chronic depression among patients with anxiety disorders. Journal of Consulting and Clinical Psychology, 65, 333-336.

APPENDICES

APPENDIX 1 – TABLES

Table 1

Results of MANOVA and MANCOVA Tests for Effects of Global Trauma and Trauma Subtypes on Mean MMPI-2 Clinical

Scale Scores for Female Subjects.

Factors ³	MANOVA Results ¹				MANCOVA Results ²				MMPI-2 Clinical Scale T-Scores ⁶					
	N ⁴	d.f.	F ⁵	N ⁴	d.f.	F ⁵	Pd	Pa	Sc	D	Pt	Ma		
NOT	85			82			63.6	60.8	64.4	69.5	67.3	54.6		
T (vs NOT)	106/85	6/184	7.38**	101/82	6/175	3.60**	71.3**	69.6***††	72.4**	69.5	70.3	56.6		
AP (vs notAP)	36/155	6/184	2.27**	33/150	6/175	2.26*	73.7**	71.6**†	72.2	68.2	70.8	58.6		
AS (vs notAS)	17/174	6/184	1.32				73.2	71.1	77.5	71.6	75.2	60.9		
CP (vs notCP)	51/140	6/184	4.07**	51/132	6/175	1.40	74.7**	71.7**	74.2**	72.5	71.7	57.3		
CS (vs. notCS)	66/125	6/184	3.37**	66/119	6/175	2.38*	71.0*	68.8*	73.0**	69.6	70.8	55.6		
NAT (vs. notNAT)	29/162	6/184	.722				69.2	64.7	71.4	71.1	70.1	58.0		

Table 1 notes

¹One-way MANCOVA tests were run with the indicated factors and the MMPI-2 clinical scale scores as dependent variables. ²One-way MANCOVA tests were run using the same factors (except for AS) and dependent variables and with the Family scale as covariate. ³T=trauma, NOT=no trauma, AP=adult physical, AS=adult sexual, CP=child physical, CS=child sexual, NAT=non-assault trauma. ⁴Sample sizes of trauma group and control group (in parentheses). ⁵Asterisks indicate significance level of MANOVA or MANCOVA (* $p < .05$, ** $p < .01$). ⁶Entries are mean MMPI-2 clinical scale scores. Asterisks indicate significance level of follow-up one-way ANOVAs (* $p < .05$, ** $p < .01$). Daggers indicate significance level of follow-up one-way ANCOVAs ($^{\dagger}p < .05$, $^{\dagger\dagger}p < .01$).

Comparison of Effects of Various Types of Assault Abuse (Sexual, Physical or Multiple) and Global Trauma (Emotional Abuse, Assault Trauma, or Both) on Mean MMPI-2 Clinical Scale Scores of Female Subjects Using MANOVA and MANCOVA Tests

Factors ¹	d.f.	F ²	Pd	MMPI-2 Scale T-Scores ³				
				Pa	Sc	D	Pt	Ma
1. ABUSE TYPE								
Main Effects								
MANOVA	18/515	3.32**	**	**	**	NS	NS	NS
MANCOVA ⁴	18/490	2.05**	NS	**	NS	NS	NS	NS
Contrasts (MANOVA only)								
SEXUAL (n=36) vs NT(n=85)			66.1	64.7	68.9	65.3	67.3	55.3
PHYSICAL (n=33) vs NT (n=85)			72.4**	71.4**	71.4	70.4	69.3	57.8
MULTIPLE (n=37) vs NT (n=85)			75.5**	72.8**	76.8**	72.8	74.3	56.8
2 EMOT/ASSAULT								
Main effects	18/456	2.70**	**	**	**	*	NS	NS
Contrasts								
Not (n=70)			62.6	61.6	64.5	68.5	66.8	55.9
EMOT (n=16) vs Not			67.3	61.6	68.8	79.1	73.1	50.4
ASSAULT (n=43) vs Not			69.9*	67.5	71.4	67.4	70.1	57.1
BOTH (n=41) vs Not			71.7**	71.4**	75.0**	72.4	72.8	57.6

Table 2 notes

¹ ABUSE TYPE has four levels: NOT=no trauma, SEXUAL=sexual trauma, PHYSICAL=physical trauma, MULT=multiple trauma. EMOT/ASSAULT has four levels: Not=no emotional abuse or assault, EMOT=emotional abuse only, ASSAULT=assault only, BOTH=emotional abuse and assault. ² Asterisks indicate significance level of MANOVA main effects, * and ** as above. ³ Entries in main effects rows are significance levels of follow-up one-way ANOVAs, * and ** as above. Entries in Contrasts rows are mean MMPI-2 Clinical Scale scores of the assault groups; asterisks indicate significance levels of follow-up Bonferroni tests. ⁴MANCOVA tests were run with Family scale as covariate.

Table 3

Predicting Family Scale Scores of Female Subjects with Abuse Group Variables: Results of Multiple Regression Analysis

<u>Model^a</u>	<u>R^{2b}</u>	<u>F</u>	<u>d.f.</u>
ExtCP*	.270**	69.0	1/187
ExtCP* + EMOT*	.338**	40.9	2/160
ExtCP* + EMOT* + PerpCP	.341**	27.5	3/159
ExtCS*	.160**	35.7	1/187
ExtCS* + EMOT*	.340**	41.2	2/160
ExtCS* + EMOT* + PerpCS*	.366**	29.6	3/154

^aPredictor variables were entered in the order shown; *indicates variables that exhibited beta weights with significant contributions at $p < .05$. ^bAsterisks indicate significance level of model; * $p < .05$, ** $p < .01$.

Table 4

Results of MANOVA and MANCOVA Tests for Effects of Global Trauma and of Childhood Sexual and Physical Assault on Mean
MMPI-2 Clinical Scale Scores for Male Subjects.

MANOVA Results				MANCOVA Results ¹			MMPI-2 Clinical Scale Scores							
Factors ²	N ³	d.f.	F ⁴	N ³	d.f.	F ⁴	Hs ⁵	D ⁵	Hy ⁵	Pd ⁵	Pa ⁵	Pt ⁵	Sc ⁵	Ma ⁵
NOT	68			66			56.2	65.0	57.9	65.1	63.6	68.6	66.4	53.1
T	68	8/127	2.04*	67	8/123	.918	62.9**	69.2	62.4*	70.7**	69.5**	73.2	75.6**†	57.6†
CS	27/108	8/126	0.88		ND	ND	62.4	65.8	60.8	68.5	70.2	71.6	73.4	56.8
CP	48/87	8/126	2.79**	48/84	8/122	.965	63.6*	70.0*	63.2*	72.0**	70.8**	73.6*†	78.1**†	58.8*

Table 4 notes.

¹ MANCOVAs utilize Family Scale as covariate. ² NOT=no trauma, T=trauma, CS=child sexual, CP=child physical. Note: in the MANOVAs and MANCOVAs, T is contrasted with NOT, CS is contrasted with notCS and CP is contrasted with notCP. ³ Sample sizes for MANOVA or MANCOVA tests. Note: for CS, entry is n(CS)/n(notCS); for CP entry is n(CP)/n(notCP). ⁴ Asterisks indicate significance level of MANOVA or MANCOVA; * $p < .05$, ** $p < .01$. ⁵ Entries are MMPI-2 scale scores. Asterisks indicate significance level of follow-up one-way ANOVA tests for the MANOVAs with T and CS as factors, (except as indicated in following note). [†]In these cases only, follow-up tests were Kruskal-Wallis tests with one d.f.

Table 5

Results of MANOVA Test for Effects of Emotional Abuse, Assault Trauma, or Both on Mean MMPI-2 Clinical Scale Scores for Male Subjects.

FACTOR: EMOT/ASSAULT

MANOVA Results: $F=2.47^{**}$ (d.f.=24/291)

MMPI-2 Clinical Scale Scores

Levels ¹	N ²	Hs ³	D ³	Hy ³	Pd ³	Pa ³	Pt ³	Sc ³	Ma ³
Not	63	53.7	63.7	57.0	60.9	60.8	67.7	66.2	53.9
EMOT	7	52.4	62.1	53.3	61.6	65.0	58.6	61.9	49.0
ASSAULT	23	61.4	69.7	62.5	70.3**	69.6*	71.3	73.3	52.8
BOTH	18	68.7**	73.6**	67.7*	74.1**	74.9**	82.9**	86.6**	64.4

¹EMOT/ASSAULT has four levels: Not=no emotional abuse or assault trauma;

Emot=emotional abuse only; Assault = assault abuse only; Both=emotional and assault

abuse. ² Sample sizes of the four groups. ³ Entries are mean MMPI-2 clinical scale

scores; asterisks indicate significance level of follow-up Bonferroni contrasts of each

trauma group against the Not group.

Table 6

Multiple Regression Analyses of Family and Trauma Variables on MMPI-2 Clinical Scale Scores.

	Pd		Pa		Sc	
<u>MODELS¹</u>	<u>R²</u>	<u>F</u>	<u>R²</u>	<u>F</u>	<u>R²</u>	<u>F</u>
T + FAM + EMOT + OBS	.342	8.72**	.264	6.00**	.309	7.51**
T + EMOT + OBS	.316	10.65**				
FAM + EMOT + OBS			.259	7.91**	.299	9.68**
CP + FAM + ExtCP + PerpCP + EMOT + OBS	.494	10.10**	.360	5.81**	.475	9.36**
ExtCP + PerpCP + OBS	.457	19.36**	.334	11.56**	.444	18.39**
CS + FAM + ExtCS + PerpCS + EMOT + OBS	.368	6.01**	.286	4.13**	.309	4.63**
FAM + EMOT + OBS			.259	7.91**	.299	9.68**
EMOT + OBS	.316	16.20**				

Table 6 notes

¹Criterion variables were added as a block into the equation in the order listed.

Abbreviations for the variables are as follows: T=TRAUMA group, FAM=FAMILY measure, EMOT=EMOTIONAL abuse, OBS=OBSERVATION of violence perpetrated by a parent, CP= CHILD PHYSICAL abuse, ExtCP=EXTENTCP that measures the extent of childhood physical abuse, ExtCS=EXTENTCS that measures extent of childhood sexual abuse, PerpCP= perpetrator of child physical abuse, and PerpCS=perpetrator of child sexual abuse.

Table 7

Sample Sizes of Abuse Groups and Controls for Male, Female and Combined Data Sets

<u>Trauma Group</u>	<u>Combined Data</u>	<u>Females</u>	<u>Males</u>
TRAUMA	176	105	71
NO TRAUMA	197	92	105
CHILD PHYSICAL	99	50	49
CHILD SEXUAL	94	65	29
MULTIPLE ABUSE	51	36	
ADULT PHYSICAL	38	36	
ADULT SEXUAL	20	17	

Table 8

Effects of Membership in Various Trauma Groups on MMPI-2 F, PK, PS, NCDI and PDS Scale T-Scores: Results of One-Way ANOVA and Kruskal-Wallis Tests.

A. Female and Male Subjects Combined					
Mean MMPI-2 Scale Scores					
Trauma Groups ^a	F	PK	PS	NCDI	PDS
TRAUMA					
T-Scores (T/NT) ^b	71.3**/63.6	73.2**/68.8	73.6**/68.7	7.31**/6.18	4.35**/3.10
d.f.(F)	1(10.68) ^d	1/357(7.31)	1/357(8.57)	1/326(7.93)	1(7.75) ^d
N (T/NT)	176/197	167/192	167/192	160/168	143/125
CHILD PHYSICAL					
T-Scores(CP/notCP) ^b	21.8**/17.7	75.6**/69.2	75.8**/69.3	7.39*/6.48	4.45*/3.52
d.f.(F)	1(17.08) ^d	1/350(11.6)	1/350(12.0)	1/318(4.01)	1(4.33) ^d
N	99/266	91/261	91/261	90/230	75/185
CHILD SEXUAL					
T-Scores (CS/notCS) ^b	72.4*/65.4	71.9/70.5	71.9/70.6	7.33/6.51	4.17/3.61
d.f.(F)	1(5.73) ^d	1/350(.547)	1/350(.441)	1/318(.321)	1/258(1.63)
N (CS/notCS)	94/270	93/259	93/259	89/231	84/176
MULTIPLE ^c					
T-Scores (Mult/NT) ^b	79.3**/63.5	74.6**/68.8	74.2**/68.7	7.65*/6.14	4.78*/3.08
d.f.(F)	3(22.83) ^d	3/349(4.44)	3/349(4.99)	3/317(2.99)	3(8.79) ^d
N (Mult/Not)	51/190	50/186	50/186	48/161	45/118
ADULT PHYSICAL					
T-Scores(AP/notAP) ^b	70.3/66.8	71.5/70.7	72.2/70.8	7.38/6.64	4.48/3.66
d.f.(F)	1/362(1.17)	1/350(.094)	1/350(.269)	1/318(1.39)	1/258(2.05)
N (AP/notAP)	43/321	42/310	42/310	40/280	40/220
ADULT SEXUAL					
T-Scores (AS/notAS) ^b	75.9/66.7	72.1/70.8	72.4/70.9	8.06/6.66	6.17*/3.61
d.f.(F)	1(1.22) ^d	1/350(.128)	1/350(.159)	1/318(2.48)	1(5.45) ^d
N (AS/notAS)	20/344	20/332	20/332	18/302	18/242

Notes: ^a Abbreviations: T=TRAUMA; NOT=noTRAUMA; CP=CHILD PHYSICAL; notCP=pooled control for CP; CS=CHILD SEXUAL; notCS=pooled control for CS; Mult=MULTIPLE; AP=ADULT PHYSICAL; notAP=pooled control for AP; AS=ADULT SEXUAL; notAS=pooled control for ADULT SEXUAL. ^bEntries for F, PK and PS are mean scale T-scores; entries for NCDI and PDS are mean raw scores. Asterisks indicate significance level of ANOVA or Kruskal-Wallis tests of indicated comparison, *p<.05, **p<.01. ^cEntries on T-score line are results of Bonferroni follow-up tests of contrasts between Mult and NT groups (two levels of the ABUSE TYPE factor). Entries on d.f.(F) line are results of the ANOVA test for the ABUSE TYPE factor. Entries on N line are the corresponding sample sizes of the contrasted groups. ^dEntries are d.f. and χ^2 for Kruskal-Wallis tests.

Table 8 continued

B. Female Subjects**Mean MMPI-2 Scale Scores**

Trauma Groups^a	F	PK	PS	NCDI	PDS
TRAUMA					
T Scores (T/NT)^b	70.9*/65.2	70.6/67.6	71.3/67.3	7.5/6.6	4.38*/3.26
d.f.(F)	1/195(4.05)	1/192(1.88)	1/192(3.34)	1/1.68(2.52)	1(5.24) ^d
N (T/NT)	105/92	105/89	105/89	96/74	95/74
CHILD PHYSICAL					
T Scores (CP/notCP)^b	72.86/66.65	72.2/68.2	72.9/68.3	7.4/6.9	4.08/3.82
d.f.(F)	1/188(3.63)	1/186(2.57)	1/186(3.41)	1/161(.557)	1/160(.215)
N (CP/notCP)	50/140	50/138	50/138	48/115	48/114
CHILD SEXUAL					
T Scores (CS/notCS)^b	73.1*/65.8	70.9/68.4	71.0/68.8	7.51/6.82	4.20/3.73
d.f.(F)	1/188(5.86)	1/186(1.12)	1/186(.964)	1/161(1.30)	1/160(.810)
N (CS/notCS)	65/125	65/123	65/123	61/102	60/102
MULTIPLE^c					
T Scores (Mult/Not)^b	78.0**/65.1	73.8/67.5	73.7/67.3	7.66/6.51	4.51/3.22
d.f.(F)	3/186(3.81)	3/184(1.75)	3/184(2.06)	3/159(1.07)	3/158(1.74)
N (Mult/Not)	36/85	36/83	36/83	35/67	35/67
ADULT PHYSICAL					
T Scores (AP/notAP)^b	71.6/67.5	71.6/68.7	72.3/68.9	7.67/6.93	4.73/3.69
d.f.(F)	1/188(1.20)	1/186(1.03)	1/186(1.46)	1/161(1.03)	1(1.48) ^d
N (AP/notAP)	36/154	36/152	36/152	33/130	33/129
ADULT SEXUAL					
T Scores (AS/notAS)^b	80.4*/67.1	74.3/68.8	75.3/69.0	8.87/6.90	6.81**/3.58
d.f.(F)	1(4.12) ^d	1/186(2.09)	1/186(2.74)	1/161(3.64)	1(7.17) ^d
N (AS/notAS)	17/173	17/171	17/171	16/147	16/146

Notes: ^aAbbreviations: T=TRAUMA; NOT=NO TRAUMA; CP=CHILD PHYSICAL; notCP=pooled control for CP; CS=CHILD SEXUAL; notCS=pooled control for CS; Mult=MULTIPLE; AP=ADULT PHYSICAL; notAP=pooled control for AP; AS=ADULT SEXUAL; notAS=pooled control for ADULT SEXUAL. ^bEntries for F, PK and PS are mean scale T-scores; entries for NCDI and PDS are mean raw scores. Asterisks indicate significance level of ANOVA or Kruskal-Wallis tests of indicated comparison, * $p < .05$, ** $p < .01$. ^cEntries on T-score line are results of Bonferroni follow-up tests of contrasts between Mult and NT groups (two levels of the ABUSE TYPE factor). Entries on d.f.(F) line are results of the ANOVA test for the ABUSE TYPE factor. Entries on N line are the corresponding sample sizes of the contrasted groups. ^dEntries are d.f. and χ^2 for Kruskal-Wallis tests.

Table 8 continued

C. Male Subjects

Mean MMPI-2 Scale Scores

Trauma Groups ^a	F	PK	PS	NCDI	PDS
TRAUMA					
T-Scores (T/NT)^b	72.0**/62.2	77.6**/69.7	77.3**/69.9	7.06*/5.87	4.34/2.88
d.f.(F)	1(7.85) ^d	1/163(9.69)	1/163(8.39)	1/156(4.23)	1(3.03) ^d
N (T/NT)	71/105	62/103	62/103	64/94	47/51
CHILD PHYSICAL					
T-Scores(CP/notCP)^b	76.5**/62.0	79.7**/70.3	79.4**/70.4	7.36*/6.02	5.11*/3.04
d.f.(F)	1(16.83) ^d	1/162(11.2)	1/162(9.83)	1/155(.798)	1(4.19) ^d
N (CP/notCP)	49/126	41/123	41/123	42/115	27/70
CHILD SEXUAL					
T-Scores (CS/notCS)^b	70.9/65.1	74.2/72.3	74.0/72.4	6.93/6.26	4.08/3.47
d.f.(F)	1(.087) ^d	1/162(.310)	1/162(.222)	1/155(.798)	1(.021) ^d
N (CS/notCS)	29/145	28/136	28/136	28/129	24/73
MULTIPLE^c					
T-Scores (Mult/NT)^b	82.5**/62.2	76.6**/69.7	75.4**/69.9	7.62/5.87	5.70/2.88
d.f.(F)	3(17.85) ^d	3/161(4.21)	3/161(3.92)	3/154(1.72)	3(5.31) ^d
N (Mult/NT)	15/105	14/103	14/103	13/94	10/51

Notes: ^a Abbreviations: T=TRAUMA; NOT=noTRAUMA; CP=CHILD PHYSICAL; notCP=pooled control for CP; CS=CHILD SEXUAL; notCS=pooled control for CS; Mult=MULTIPLE. ^bEntries for F, PK and PS are mean scale T-scores; entries for NCDI and PDS are mean raw scores. Asterisks indicate significance level of ANOVA or Kruskal-Wallis tests of indicated comparison, *p<.05, **p<.01. ^cEntries on T-score line are results of Bonferroni follow-up tests of contrasts between Mult and NT groups (two levels of the ABUSE TYPE factor). Entries on d.f.(F) line are results of the ANOVA test for the ABUSE TYPE factor. Entries on N line are the corresponding sample sizes of the contrasted groups. ^dEntries are d.f. and χ^2 for Kruskal-Wallis tests.

Table 9

Effects of Membership in Various Trauma Groups on MMPI-2 Pd, Pa, Sc, D, Pt and Ma Scales: Results of One-Way MANOVA Tests.

MMPI-2 Clinical Scale T-Scores

Trauma Groups ^a	N ^b	d.f.	F ^c	Pd ^d	Pa ^d	Sc ^d	D	Pt	Ma
TRAUMA									
Combined (T/NT)	172/190	6/355	8.78**	71.2**/63.8*	69.7**/61.5	73.8**/65.3*	69.3/66.5	71.6**/67.3	57.1*/54.1
Females (T/NT)	106/85	6/184	7.38**	71.3**/63.6	69.6**/60.8	72.4**/64.4	69.5/69.5	70.3/67.3	56.6/54.6
Males (T/NT)	68/68	8/127	2.04*	70.7**/65.1	69.5**/63.6	75.6**/66.4*	69.2/65.0	73.2/68.6	57.6/53.1
CHILD PHYSICAL									
Combined (CP/notCP)	98/263	6/354	7.79**	73.4**/64.9	71.4**/63.2	76.1**/66.8*	71.0*/66.7	72.7**/68.1	58.1*/54.6
Females (CP/notCP)	51/140	6/184	4.07**	74.7**/65.4	71.7**/63.5	74.2**/66.9	68.4/72.4	71.7/68.0	57.3/55.1
Males (CP/notCP)	48/87	8/126	2.79**	72.0**/65.5	70.8**/64.1	78.1**/67.0*	70.0*/65.4	73.6*/69.3	58.8*/53.4
CHILD SEXUAL									
Combined (CS/notCS)	91/270	6/354	3.28**	70.4**/66.1	69.5**/64.0	73.3**/68.0	68.3/67.7	71.4/68.6	56.1/55.3
Females (CS/notCS)	66/125	6/184	3.37**	71.0*/66.2	68.8**/64.1	73.0**/66.7	69.6/69.4	70.8/69.0	55.6/55.8
Males (CS/notCS)	27/108	8/126	1.03	68.5/67.6	70.2/65.5	73.4/70.3	65.8/67.3	71.6/70.6	56.8/54.9
MULTIPLE									
Combined (Mult/NT)	51/190	18/999	4.06**	74.3**/63.8	73.9**/61.5	77.8**/65.3	70.7/66.5	74.2*/67.3	57.0/54.1
Females (Mult/NT)	37/85	18/515	3.32**	75.5**/63.6	72.8**/60.8	76.8**/64.4	72.8/69.5	74.3/67.3	56.8/54.6
ADULT PHYSICAL									
Combined (AP/notAP)	43/318	6/354	2.66*	72.5**/66.5	70.7**/64.7	71.9/69.0	68.5/67.7	71.7/69.0	57.7/55.3
Females (AP/notAP)	36/155	6/184	3.27**	73.7**/66.5	71.6**/64.3	72.2/68.1	68.2/69.8	70.8/68.5	58.6/55.0
ADULT SEXUAL									
Combined (AS/notAS)	20/341	6/354	.686	72.2/66.9	69.1/65.2	76.0/69.0	71.2/67.6	73.6/69.1	57.6/55.4
Females (AS/notAS)	17/174	6/184	1.32	73.2/67.4	71.1/65.2	77.5/68.0	71.6/69.3	75.2/68.4	60.9/55.2

Notes: ^a Abbreviations: T=TRAUMA, NOT=NO TRAUMA; CP=CHILD PHYSICAL; notCP=pooled control for CP; CS=CHILD SEXUAL; notCS=pooled control for CS; Mult=MULTIPLE; AP=ADULT PHYSICAL; notAP=pooled control for AP; AS=ADULT SEXUAL; notAS=pooled control for ADULT SEXUAL. ^b Sample sizes for the contrasted groups. ^c Asterisks indicate significance values of one-way MANOVA tests. ^d Entries are mean scale T-scores. Asterisks indicate significance values for follow-up one-way ANOVA tests (except as indicated in following note), * $p < .05$, ** $p < .01$. ^e In these cases, the follow-up test was a Kruskal-Wallis test with 1 d.f.; asterisks indicate significance level as above.

Table 10

Effects of Extent of Abuse and Perpetrator Identity on MMPI-2 Dissociation and Clinical Scale Scores: Results of One-way ANOVA, MANOVA and Kruskal-Wallis Tests.

Abuse Variables	Dissociation Scales: ANOVA Results				Clinical Scales: MANOVA Results			
	NCDI		PDS		Follow-up ANOVA Results			
	d.f.	F ^a	d.f.	F(or χ^2) ^a	d.f.	F ^b	Pd ^c	Sc ^c
<u>ExtentCP</u>								
Combined	5/312	1.61	5/252	3.34**	15/969	4.49**	**	**
Females	4/158	1.01	4/157	2.07	12/482	2.91**	**	**
Males	5/149	1.34	3 ^d	1.76 ^d	15/448	2.78**	**	**
<u>PerpCP</u>								
Combined	5/308	1.61	5/249	3.89**	15/958	3.52**	**	NS ^e
Females	3/158	.952	3/157	2.07	9/443	2.28*	**	NS
Males	5/146	2.07	4 ^d	3.61 ^d	15/439	2.51**	**	NS ^e
<u>ExtentCS</u>								
Combined	5/307	1.53	5/248	1.04	15/953	2.40**	*	*
Females	5/155	.657	5/154	.476	15/492	2.08**	NS	*
Males	5/146	1.54	5/87	2.41*	15/439	1.55	NS	NS
<u>PerpCS</u>								
Combined	5/297	.985	5/240	.605	15/922	1.75*	*	NS
Females	5/146	.422	5/145	.539	15/464	1.13	NS	NS
Males	5/145	1.93	4 ^d	4.08 ^d	12/421	1.88*	NS	*
<u>ExtentAP</u>								
Combined	5/310	1.59	5/250	2.97*	15/961	1.35	NS	NS
Females	5/155	1.51	5/154	3.58**	15/492	1.60	NS	NS
<u>ExtentAS</u>								
Combined	4/314	1.25	4/254	5.84**	12/934	1.64	NS	NS
Females	4/158	1.16	4/157	6.68**	12/482	1.63	NS	NS

Table 10 notes: ^aTable entries are F values for one-way ANOVAs (except as in note 4); asterisks indicate significance levels: * $p < .05$; ** $p < .01$. ^bAsterisks indicate significance level of main effects of one-way MANOVAs with Pd, Pa and Sc as dependent variables; levels as above. ^cTable entries are significance levels for follow-up one-way ANOVAs (except as in note 5); NS = not significant; asterisks as above. ^dTable entries are d.f. and χ^2 for Kruskal-Wallis tests. ^eTable entries are significance levels for Kruskal-Wallis follow-up tests.

APPENDIX 2 – FIGURES

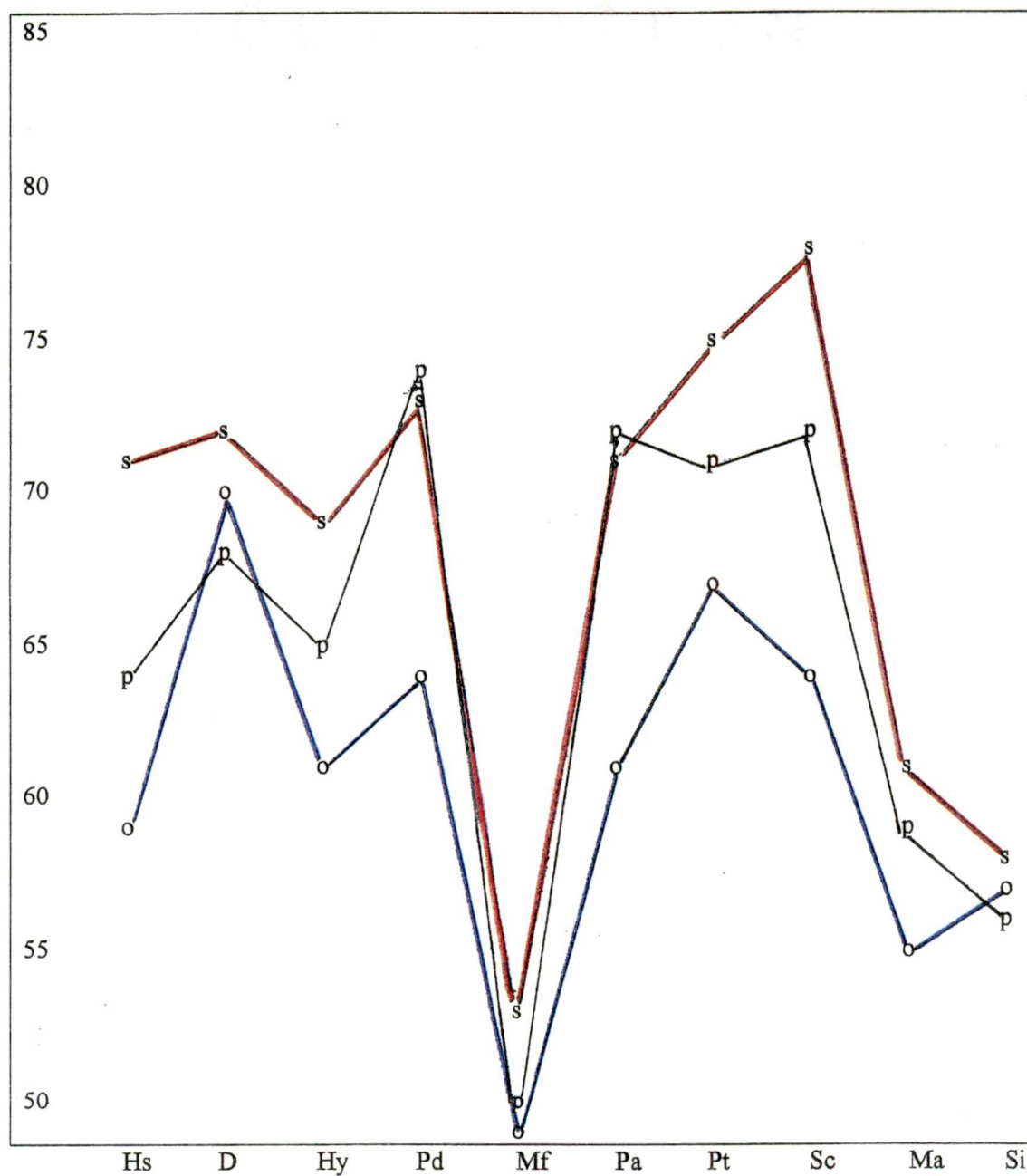


Figure 1. Female mean group profiles for ADULT PHYSICAL (p), ADULT SEXUAL (s) and NOT (o) control groups.

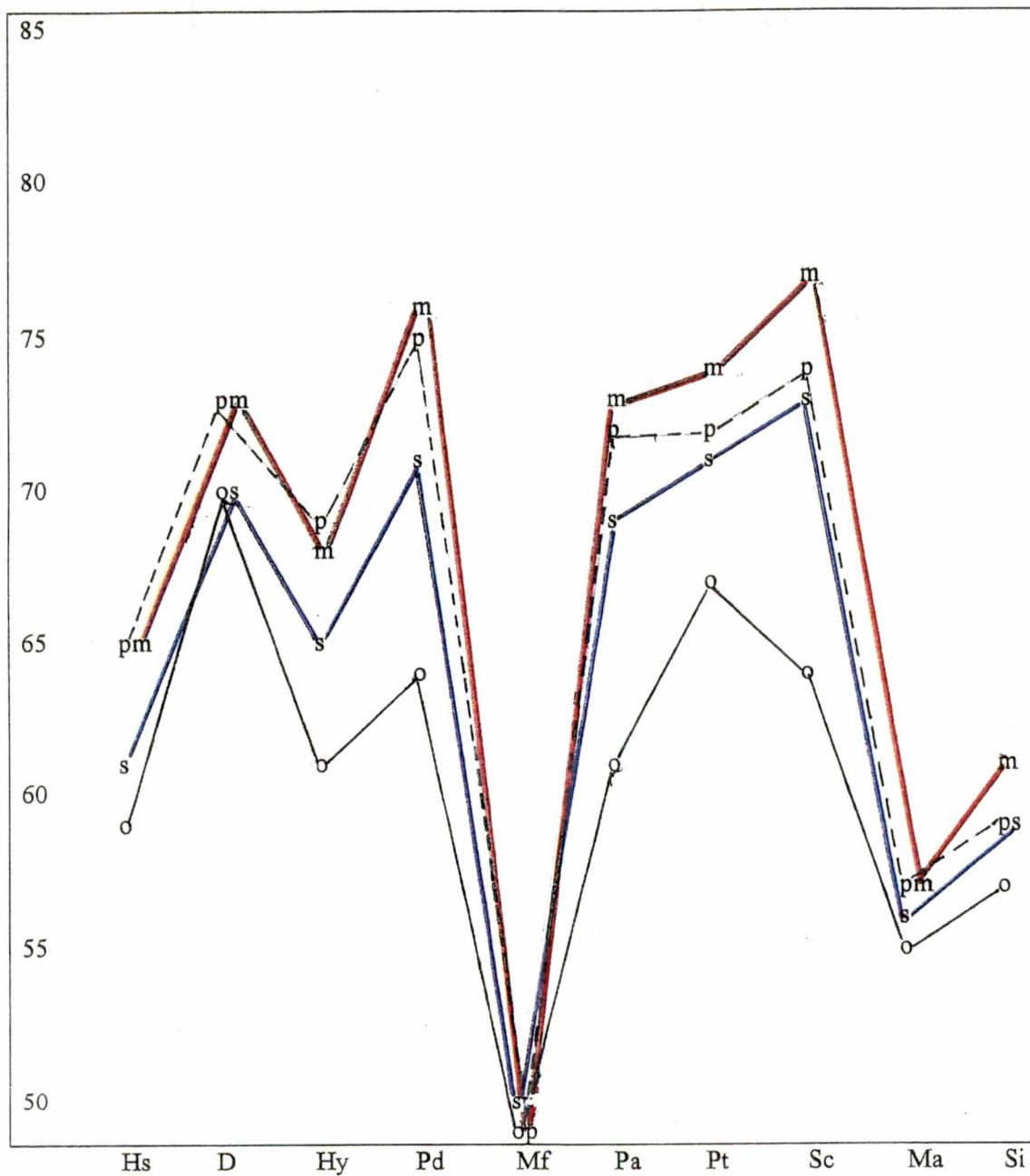


Figure 2. Female mean group profiles for CHILD PHYSICAL (p), CHILD SEXUAL (s), MULTIPLE (m) and NOT control group (o).

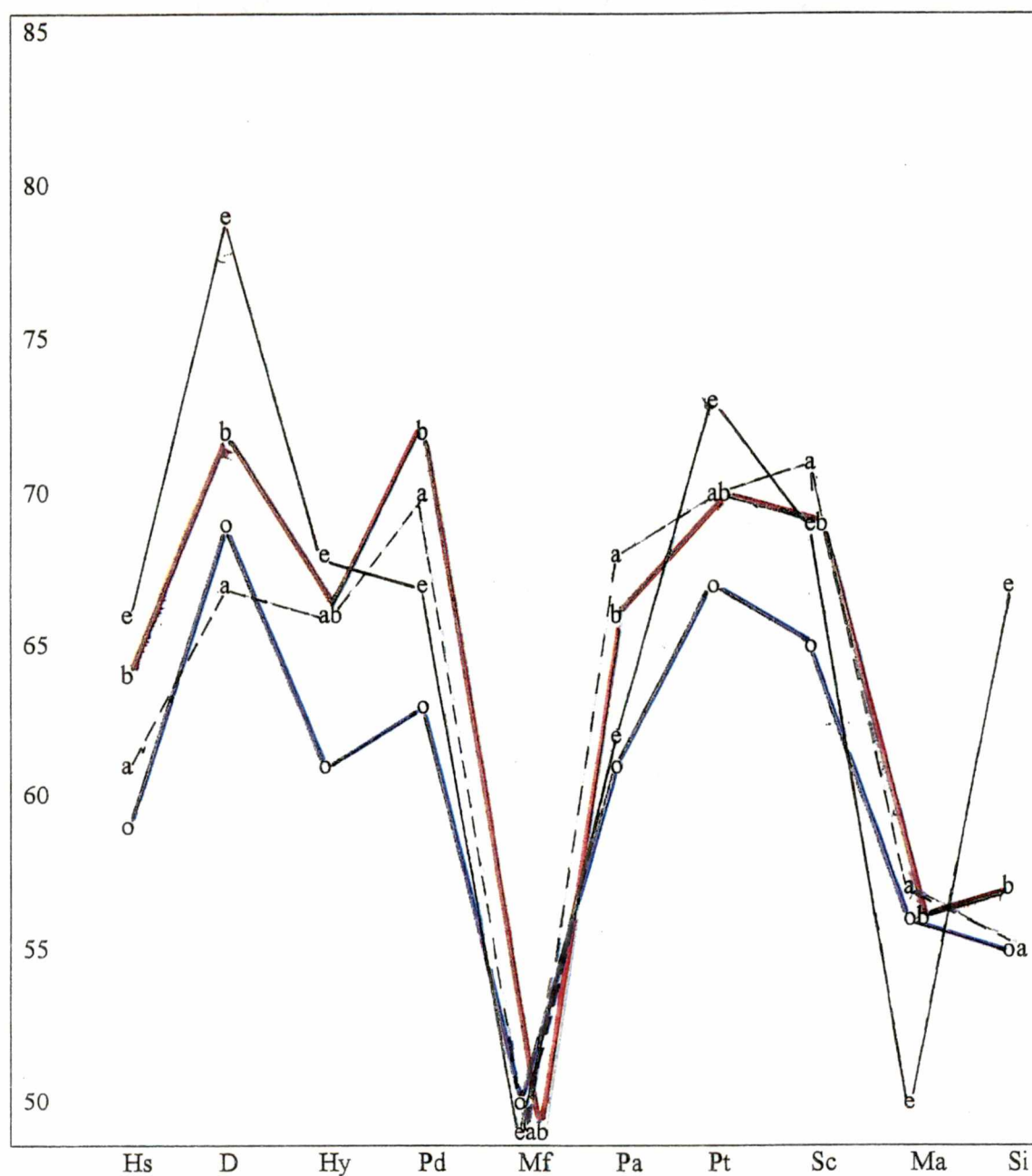


Figure 3. Female mean group profiles for EMOT (e), ASSAULT (a), BOTH (b) and the Not control group (o).

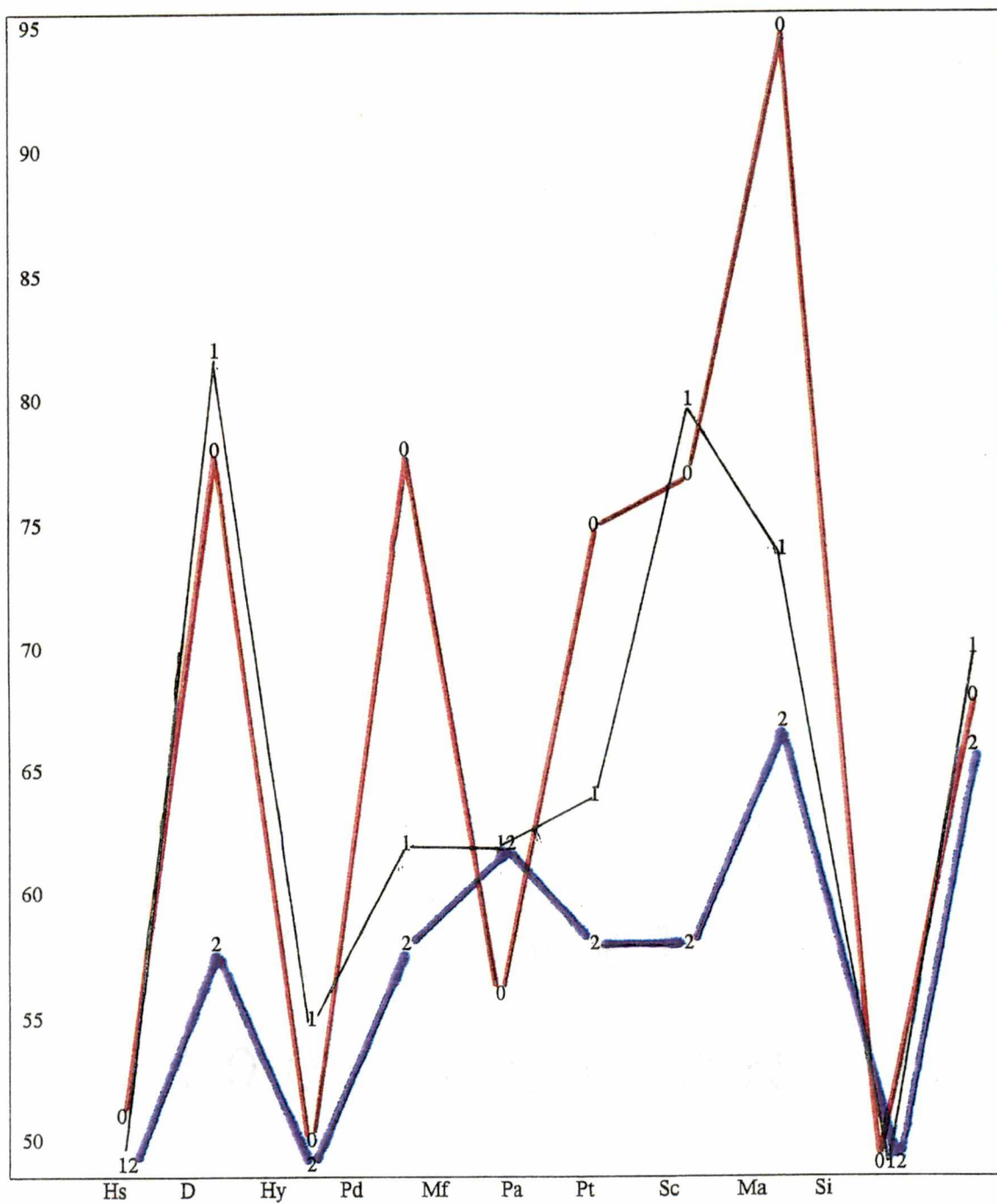


Figure 4. Case study profiles at beginning treatment (0), after one year of treatment (1), and after two years of treatment (2).

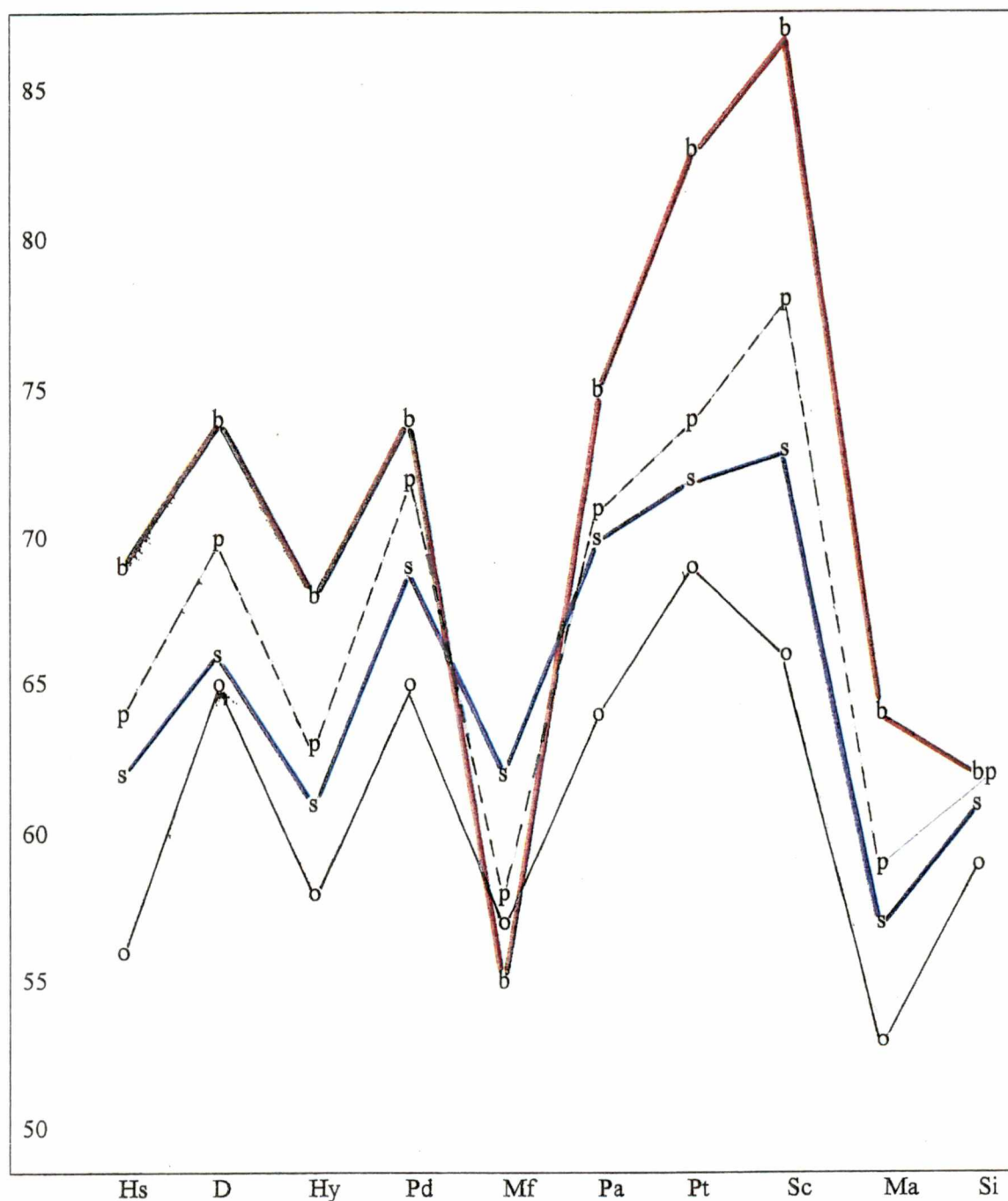


Figure 5. Mean male group profiles for CHILD SEXUAL (s), CHILD PHYSICAL (p) and EMOTIONAL + ASSAULT (b) versus the NOT control group (o).

VITA

Elizabeth Anne McKee was born in South Bend, Indiana on October 22, 1958. She attended St. Joseph's Elementary school in South Bend, and St Pious X and Hillside grade schools in Omaha, Nebraska. After attending the Morgantown, West Virginia public schools in junior high, she attended Interlochen Arts Academy, in Michigan, and National Academy of Arts, in Illinois, high schools on dance scholarships. Upon high school graduation she attended Michigan State University, and after transferring to the University of California – San Diego graduated with a Bachelor of Arts in Biology in 1984. She worked as a Refugee resettlement caseworker and coordinator of a program, Mentors for new Americans, for 6 years in Eau Claire Wisconsin. In her work with Hmong refugees from Laos she became interested in the impact of trauma and resilience in post-trauma adjustment. In July 1990 she moved to Knoxville Tennessee where she later pursued the Doctorate of Education in Counseling Psychology. Her doctoral internship was at the University of Tennessee Student Counseling Services and, as a part of her internship, she also worked as a counselor at the Sexual Assault Crisis Center, a non-profit organization in Knoxville. She received her doctoral degree in August, 1999. Ms. McKee is currently working as a staff psychologist at the University of Tennessee Student Counseling Center.