MMPI-2 CHARACTERISTICS OF MALE SERIAL MURDERERS

Scott E. Culhane
University of Wyoming

Meagen M. Hildebrand
University at Albany, State University of New York

Stephannie Walker
Mount Olive College

Matt J. Gray
University of Wyoming

The current research reports 61 male serial homicide offenders' Minnesota Multiphasic Personality Inventory – 2 (MMPI-2) results. Offenders had an average MMPI-2 profile code of 4-6-8. They also scored high on the Harris-Lingoes scales of Authority Problems, Persecutory Ideas, and Emotional Alienation. Megargee classifications were fairly divided, but Delta was the largest grouping. A hierarchical cluster analysis of MMPI-2 profiles revealed two distinct profiles, one disturbed and one non-disturbed. The disturbed cluster showed numerous elevations on the clinical scales, while the non-disturbed cluster only had an elevation on Psychopathic Deviance. There were several differences in content and supplementary scales measurements for the two clusters. The MMPI-2 basic scales were limited in the prediction of offender's murderous behavior. This project shows the average serial murderer has a typical MMPI-2 pattern and one indicative of emotional disorders. However, the murderers remain diverse in their individual psychopathologies. Implications and limitations of the research are discussed.

Keywords: MMPI-2; serial murder; cluster analysis; Megargee Classification System.

Researchers have proposed various mechanisms for explaining murderer's criminality, including frustration (Levin & Madfis, 2009), personality (Declercq, Willemsen,

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Author Notes: Scott E. Culhane, Department of Criminal Justice, University of Wyoming; Meagen M. Hildebrand, School of Criminal Justice, University at Albany, State University of New York; Stephannie Walker, School of Arts and Sciences, Mount Olive College; Matt J. Gray, Department of Psychology, University of Wyoming.

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Correspondence concerning this article should be addressed to Scott E. Culhane, Department of Criminal Justice, Department 3197, University of Wyoming, 1000 E. University Ave., Laramie, WY 82071. Email: sculhane@uwyo.edu

Audenaert, & Verhaeghe, 2012), neurology (Blake, Pincus, & Buckner, 1995), drugs and alcohol (Langevin, Ben-Aron, Wortzman, Dickey, & Handy, 1987), childhood maltreatment (Weizmann-Henelius et al., 2010), mental illness (Eronen, Tiihonen, & Hakola, 1996), peer association (Katz & Marquette, 1996), culture (Fabrega, 2004), and region of the United States (Ousey & Lee, 2010). Still, there remains no single predictor as to why people commit murder, and instead the consensus seems to be that violent acts, such as murder, occur for different reasons in different people (Katz & Marquette, 1996).

While the overall murder rate has dropped in the United States since its peak in the 1970s and 1980s (Federal Bureau of Investigation, 2011), the public's fascination with special cases of criminal homicide (e.g. mass, spree, and serial killing) has not waned and is arguably higher than ever (Holmes & Holmes, 2011). Movie and television serial killer characters, such as Hannibal Lecter and Dexter Morgan, are popular enough to warrant multiple movies/television seasons, books, and merchandise sales. Still, our understanding of repeated murder and why it occurs is very limited (White, 2011). The current project examines the largest directly collected data set of known multiple killers ever assembled for potential psychopathology.

MURDERERS AND PSYCHOPATHOLOGY

Yarvis (1990) interviewed and diagnosed 100 pretrial murderers and found that almost 90% of them had Axis I disorders, with substance abuse and psychotic disorders being the most common. Furthermore, 74% of the subjects had an Axis II diagnosis with antisocial (38%) and borderline personality disorder (18%) being the most common. Yarvis (1990) also reviewed 10 previous studies of murder defendants accounting for more than 1400 subjects. The studies had a range of psychoses between 5 and 64 percent and a range of antisocial personality disorder of 8 and 27%. Yarvis found significant differences in the diagnostic patterns for variables of assailant/victim relationship, homicide versus homicide and other crimes simultaneously, and criminal history. The same sample was subjected to a further examination of their alcohol and drug use (Yarvis, 1994). Yarvis (1994) concluded that substance use was a significant contributor to homicidal behavior, but not for all murderers. Similar findings have been seen in European samples of murderers in long-term forensic-psychiatric observation (Szymusik, 1972). Furthermore, Yarvis (1995) compared data from 78 pretrial homicide defendants, 92 pretrial sexual assault defendants, and 10 pretrial sexual assault defendants who killed their victim. His forensic evaluations found several differences in Axis I and Axis II diagnoses for the three groups. Some of the notable findings were higher rates of general Axis I disorders for the homicide offenders (non-sexual), particularly psychotic tendencies, and higher rates of Axis II disorders for both groups of homicide offenders, particularly antisocial personality disorder.

Cunningham and Vigen (2002) reviewed 13 studies of death row inmates, 11 of which conducted various clinical evaluations. In every evaluation study a "high incidence" of psychological disturbances was found, but more striking was the finding that the rates of psychological disorders were well above those found in the general prison population. Blake and colleagues (1995) gave neurological examinations to 31 suspected murderers

awaiting trial. They found that 100% of the sample displayed abnormalities either neurologically or psychologically, including high percentages of schizophrenia, paranoid type (26%) and depression (29%). The aforementioned percentages of diagnoses from Yarvis (1990) and Cunningham and Vigen (2002) are higher than the general prison population for Axis I disorders (15%), but in line for personality disorders (75%) (Stoner, 2008).

Other research looking at specific mentally disordered murderers was conducted by Matejkowski, Cullen, and Solomon (2008) and Wilcox (1985, 1986). The offenders' clinical archived records in Matejkowski et al.'s study showed that inmates were experiencing major depression (60%) followed by schizophrenia (28%). Wilcox (1985, 1986) also found high incidence of mental illness in a sample of murderers. The psychiatric evaluations showed 49 of 71 murderers had serious mental disorders that affected their crimes. Antisocial, drug abuse, and schizophrenia were the three highest diagnoses in his research.

MMPI & MMPI-2 AND MURDERERS

Holcomb and Adams (1983) were able to demonstrate that elevations in the original Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1943) were correlated with verbal intelligence in a group of convicted murderers. Holcomb and Adams (1983) did note some racial differences in the focus of the participants; however, their earlier work found that intelligence differentiated Black and White murderers more so than personality (Holcomb & Adams, 1982).

The personality structure of violent individuals and non-violent individuals has been tested with the MMPI as well (Deiker, 1974; Fraboni, Cooper, Reed, & Saltstone, 1990). Deiker (1974) made several planned comparisons between pretrial homicide defendants and convicted property offenders. His suspected murderer group had a significantly higher K scores (a tendency to be defensive) and significantly lower ability to control hostility. Fraboni et al. (1990) were unable to find differences in two groups of violent and non-violent offenders. There are two areas of concern in the evaluation of their murderer sample. First, only 35 of their pretrial sample were classified as violent, and those included subjects accused of assault, robbery, and sexual assault (i.e., a small number of homicide offenders). Second, Fraboni et al. focused their attention on comparing only two coded disorders [4/3, 3/4, 4 = Psychopathic Deviate (Pd), 3 = Hysteria (Hy), and 4/8, 8/4, 8 = Schizophrenia (Sc)]. The testing of repeat violent offenders would not be addressed by their work.

Quinsey, Arnold, and Pruesse (1980) compared the MMPI profiles of murderers or attempted murderers to rapists, arsonists, perpetrators of sex offenses on children, and property criminals. While they did not find any remarkable MMPI differences among the groups, there were noticeable problems with the sample. First, *all* participants were remanded to a psychiatric hospital for a pretrial assessment via court order. Thus, the courts must have recognized some need for a psychological testing. Second, the sample was comprised of those who had yet to be convicted of their crimes. Third, pretrial samples have a motivation to present themselves in a positive light, which may skew the profiles. Finally, the murderer sample was subdivided into those that murdered family members

or girlfriends, and those that murdered non-family members. Missing data led to some tests having less than 15 suspected murderers. Such small samples make for difficult comparison tests. Later research on pretrial murderers has contradicted the findings of Quinsey et al. (1980) by showing significant differences between killers of known (e.g. family, friends, acquaintances) and unknown victims (i.e. strangers) (Holcomb, Adams, Ponder, & Anderson, 1984).

Holcomb, Adams, and Ponder (1985) identified five MMPI profiles for pretrial murderers. Their hierarchical cluster analyses successfully classified 96% of murderers in a second group analysis. This work served as a replication of Anderson and Holcomb (1983). Subsequent work by Kalichman (1988) expanded the work of the Holcomb lab by testing convicted murderers in an attempt to identify patterns in the MMPI profiles. Kalichman found four profiles for convicted murderers, and among two of the profiles there was a significant difference for the type of victim. Like Holcomb et al. (1984), Kalichman's data suggest those who killed strangers were different from those who killed persons known to them (at least in two of the four profiles). Furthermore, Kalichman's two most psychologically deviant groups had elevations on the 4 (Pd) scale, and the most disturbed group also showed elevations on the 2 (Depression; D), and 8 (Sc) scales. It is important to note that Kalichman's sample consisted of murderers who were deemed trusted enough for work release and not those considered dangerous or those with a high potential for violence. Biro, Vuckovic, and Djuric (1992) also found a four profile system for convicted murderers in an incarcerated Yugoslavian sample. They concluded that their four hypothesized profiles, psychotic, hypersensitive, psychopathic, and 'normal,' accounted for 72% of the killers in their sample.

The use of pretrial murderers and other court-referred defendants has been compared using the revised version of the MMPI, the MMPI-2 (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989; Shea & McKee, 1996). Shea and McKee found an 8 (Sc) - 6 (Paranoia; Pa) point code profile for the pretrial murderer group and an overall profile extremely similar to Holcomb et al.'s data (1984). While they did not find differences in the murderer group and a group consisting of other offenses, it must be repeated that the other group was also referred to a psychiatric institution and may not be a valid comparison group. Recent research in the Netherlands has subjected pretrial criminal defendants' MMPI-2 profiles to cluster analysis (Spaans, Barendregt, Muller, de Beurs, Nijman, & Rinne, 2009). Their sample included all manner of criminal offenses and level of offender (i.e. first time & repeat). Spaans and colleagues only found two clusters (disturbed and non-disturbed), but the clusters were unable to predict type of crime or most clinical characteristics. Both clusters had a 4 (Pd) – 6 (Pa) average pattern. Still, European and North American samples sometimes differ in psychological testing and the norms of the scales (Rossi & Sloore, 2005; see Coid et al., 2009 for a large scale testing of United Kingdom prisons with similarities to North American inmates), and the authors concluded "the results of this study can only be generalized to defendants of very severe crimes" (Spaans et al., 2009, p. 450). Therefore, an examination of the MMPI-2 profiles of offenders repeatedly committing the most heinous crimes in United States' institutions would be beneficial.

The MMPI and criminal homicide research is best summarized by Craig (2008) who reviewed 14 studies (30 data sets) of MMPI profiles and 1114 murderers. He was able to make several conclusions. First, Pd was elevated in nearly all profiles, which is not surprising given the nature of the items, but as Craig notes, "most people with elevated Pd scores do not commit murder" (p. 397). Second, one-third of the data sets also found a clinically elevated Sc. Third, more than half of the studies found elevated Pa scores for the murderers. Thus, the median profile in Craig's review was a 4 (Pd) – 6 (Pa) – 8 (Sc), one that is indicative of a severe emotional disorder. Nicholas (2006) found the same profile in Jeffrey Dahmer, who murdered 17 men. Craig (2008) also found that only 5 of the 30 data sets showed no psychopathology. However, Craig noted that there is no single MMPI profile code specific to murderers based upon his literature review. Still, those with the 4-6-8 profile should be scrutinized further.

SERIAL MURDERERS

Hickey (2010) estimates there are between 35 and 100 serial homicide offenders operating at any given time in the United States. This project was interested in research that directly studied the murderer not the action of murder (Canter & Wentink, 2004). In 1985 the Federal Bureau of Investigation (FBI) published research on the largest collected data set of serial murderers. Special agents of the FBI's Behavioral Science Unit (BSU) interviewed 36 sexual murderers, of which 25 were serial offenders (The Men Who Murdered, 1985). Their work took those interviews and the information gathered from the crime scenes to create a system of profiling sexual murderers (Ressler & Burgess, 1985). However, the methodology, rigor, and consistency of the interviews that took place are unknown. Furthermore, the data is restricted to a single type of serial homicide perpetrator, sexual killers.

The second largest reported data set of information directly gathered from serial murderers we could locate was the dissertation by Romo (2009)[1]. Romo's research examined the archived MMPI-2 data of eight California serial murderers. None of the profiles showed elevations on the validity scales of L or K. However, six of the eight had elevated F scales, a trend to fake bad or fake psychopathology. In this case, the elevation may be due to an attempted insanity plea in court, or actual indication of severe psychopathology. The source of the forensic assessments is not entirely clear. Like the study of the MMPI-2 profiles of Dahmer (Nichols, 2006) and the 1100+ murderers (Craig, 2008), the average offender in her sample had a 4 (Pd) – 6 (Pa) – 8 (Sc) profile. The elevations found by Romo will be examined in our data set to see if such a trend indeed exists in a larger sample.

Romo found that the system developed by Megargee (2006) was sufficiently able to classify all offenders. Megargee's system utilizes a structured set of rules to classify all types of criminal offenders based upon their MMPI/MMPI-2 clinical profile.

Romo (2009) found the majority of her sample would classify as group "Charlie"(see Megargee [2006] for a description of the system), which is characterized by point codes involving 4, 6, and 8. Megargee (2006) states only of 6% of men in the correctional facilities

are Charlies. Such individuals have been the most studied in the Megargee classification system and are from the most abnormal and deprived backgrounds. This translates into one of the groups with the most deviant and violent histories of criminal activity. Romo found that five of her eight serial killers met the criteria for such a classification (the remaining three were all unique: Baker, Delta, Foxtrot). This lends further credence to the notion that serial offenders, and particularly serial homicide offenders, are unique to the prison population.

Finally, the third data set of consequence was also collected by the FBI. Beasley (2004) interviewed 20 serial murderers in an effort to compare backgrounds and self world views for an ongoing project by the BSU. The 2004 article focused on only seven of the interviews conducted. More than half of the participants had used drugs or alcohol at the time of their crimes and more than half had extensive criminal histories prior to their capture. Furthermore, more than half met the criteria for a diagnosis of psychopath. The primary motive was sex, but profit and affect also were present.

The remaining research on serial murderers has been conducted through crime scene analyses (Canter, Alison, Alison, & Wentink, 2004), case studies on living (Culhane, Hilsted, Freng, & Gray, 2011) or deceased offenders (Nichols, 2006), autobiographical works (Winter et al., 2007), public records (Wright, Pratt, & DeLisi, 2008), police records (Bateman & Salfati, 2007; Salfati & Bateman, 2005), and newspaper/magazine coverage (Santtila et al., 2008; Stote & Standing, 1995). Skrapec (2001) argues that these methods cannot translate to explaining serial murder. "How we look at the problem of serial murder will determine what we find" (Skrapec, 2001, p. 48).

Culhane et al. (2011) completed the most comprehensive psychological report on a single serial killer to date. In their paper, the authors examined the case study of a murderer responsible for the deaths of four women. They collected a self-report of the convict's MMPI-2, *Millon Clinical Multiaxial Inventory-III* (MCMI-III; Millon, Davis, & Millon, 1997), three measures of psychopathy, two measures of anger, a measure of aggression, and sociological measures of the offender's childhood and criminal attitudes. This murderer's Megargee Classification was group "Delta," which is notated by a single elevation of Scale 4. Recall that Romo (2009) also found a Delta among her sample of serial killers. Megargee (2006) identifies Delta profiles as those with the highest IQ of any group. However, they typically come from hostile homes preventing proper socialization or value development.

The results of Culhane et al.'s (2011) case suggested little psychopathology, but they noted that the killer may have simply aged out of much of the potential disturbances. More importantly, the model for gathering more extensive data on serial killers was proven to be feasible. Beasley's (2004) final recommendation for the study of such homicide was as follows, "Overall the study of serial murder should be objective and standardized, should include as many cases and subjects as possible" (p. 413). Studies of sexual homicide have shown notable differences in serial and non-serial offending (Campos & Cusson, 2007).

Therefore, we explored the patterns of psychopathology of all types of murderers who are responsible for the death of more than one victim.

There were five specific predictions with regards to the MMPI-2 profiles. First, we expected our sample of murderers to show the same 4-6-8 profile that was found in the smaller samples of serial killers (Romo, 2009). Second, only the Antisocial Practices (ASP) should show consistent elevations on the content scales, but this is driven by the clinical elevations of Scale 4. Third, Overcontrolled Hostility (O-H) was anticipated to average a clinically elevated score, as elevated scores are particularly helpful in assessment of violent convicted criminals (Megargee, 2006). Fourth, based on Romo's (2009) findings, the majority of our sample should fit into the Charlie classification of Megargee's system. Finally, we performed an exploratory hierarchical cluster analysis and expected to see the two cluster solution, disturbed and non-disturbed, like Spaans et al. (2009) found.

METHOD

Participants

The project solicited participation from 556 suspected incarcerated multiple murderers. One hundred and eighty four offenders (33.1%) agreed to participate. Their state's department of corrections was contacted and approval received. Unfortunately, 71 inmates were not able to participate due to rejection by their state's research review board.[2] Two inmates were paroled before receiving the packet. A further 28 did not complete the questionnaire and did not respond to a follow-up letter. The total number of responses was 83 (74.8% return rate). For this project only the male ($n = 75$) perpetrators were further scrutinized and analyzed. Two were immediately dismissed because of high rate of missed items.

Our sample had to have committed at least two murders at two different incidents. Participants were categorized based on murders that we could confirm, not the number of suspected murders. There is some debate about the number of incidents of murder necessary to qualify as a serial killer (Ioannou, 2010). However, the FBI's National Center for the Analysis of Violent Crime (NCAVC; Morton & Hilts, 2008) suggests that two victims are acceptable for classification as a serial murderer. Upon examination of our subjects it was determined that nine offenders only committed a single murder. Eight of the nine were removed from the data set. The other offender had committed a murder and made a significant attempt to kill another person in a separate event. Therefore, his data were included as well.

A second criterion of serial killing is that offenses occur at different times or places. This differentiates serial murder from mass murders. Four of the offenders did not meet this standard and were excluded because of their categorization of mass murderer.

Finally, attempts have been made to differentiate between a serial murderer and a killer on a spree. The proposed "cooling-off" period must be present (Morton & McNamara, 2005), which dictates the killer returns to his normal life style without the murderous activity. This final criterion is disregarded by some researchers (e.g. Farrell, Keppel, &

Titterington, 2011), as well as the NCAVC. The project allowed for the possibility that our inmates' murders could be a series of spree killings and determined that only five were (4, 2, 2, 3, & 3 victims). Of the remaining 55 participants, 16 serial murdered two victims and 39 serial murdered three or more victims. Our final data set consisted of 61 murderers. The mean number of victims for these murderers was 4.11 confirmed kills and 4.57 suspected kills. The killers were mostly White (65.6%), followed by Black (18.0%), Hispanic (4.9%), Native American (1.6%), and other (9.8%).

Materials

This project focuses on serial murderer responses to the *Minnesota Multiphasic Personality Inventory – 2* (Butcher et al., 1989), one of the most frequently administered objective tests for the assessment of personality in forensic assessments, community samples, clinical populations, and incarcerated persons (Craig, 2008). The MMPI-2 is composed of 567 true-false items and reads at a 5th grade level. It can aid in assessments of mental disorders, personality characteristics, and behavioral disorders (Butcher et al., 1989). The scales of the MMPI-2 are objective and standardized, as well as highly valid and reliable. Furthermore, the MMPI-2 has a set of distinct rules for the detection of malingering, symptom exaggeration, and minimization. Our project analyzed the 10 clinical scales, 15 content scales, and the 20 supplementary scales. We also examined the fit of our killers on the criminal classification system of Megargee (2006).

Additional measures. As part of the larger project, several other scales were administered in the questionnaire. While they are not reported here, measures of psychopathology, psychopathy, criminal thinking, anger, aggression, and other factors (e.g., criminal behavior, drug use, and risk factors related to family, self-control, neutralization, and community) were collected.

RESULTS

MMPI-2 Profiles

The MMPI-2 profiles were first analyzed for their descriptive values (see Table 1). Next, a hierarchical cluster analysis using Ward's method (Ward, 1963) was performed on the 10 clinical scales. This method creates an objective classification system by grouping individuals together based on similar answers in the data set (Spaans et al., 2009). We first examined the agglomeration coefficients from the Ward method. Looking for the step before a large increase, we determined the point of the optimal number of clusters. After this process, the optimal number of clusters was entered in a process known as *k*-means clustering (Steinley, 2006). This process forces the participants' scores into one of the clusters identified in the previous steps. This would allow the groups to be compared on their average profiles.

Table 1.

Mean MMPI-2 Clinical, Content, and Supplemental Scores for All Male Serial Homicide Participants ($N = 61$)

Clinical				Content				Supplemental			
	Mean	SD	(Megargee)		Mean	SD	(Megargee)		Mean	SD	(Megargee)
VRIN	49.15	9.13	(49.3)	ANX	51.34	11.96	(53.5)	A	52.89	12.18	(*)
TRIN	57.00	6.24	(56.8)	FRS	49.23	10.35	(51.6)	R	50.82	9.57	(*)
F	67.05	10.66	(55.0)	OBS	49.93	12.77	(49.1)	ES	45.16	10.79	(*)
Fb	67.48	16.93	(58.0)	DEP	62.13	14.82	(54.6)	Do	39.15	8.27	(43.0)
Fp	59.51	10.55	(52.4)	HEA	57.26	12.68	(53.0)	Re	38.89	8.67	(45.6)
L	53.70	19.55	(56.3)	BIZ	56.44	13.37	(53.3)	Mt	54.26	12.84	(*)
K	50.25	16.56	(52.0)	ANG	51.82	11.42	(49.0)	PK	60.11	15.02	(*)
S	46.74	10.61	(52.8)	CYN	57.54	12.46	(52.0)	MDS	65.43	13.68	(52.7)
Hs	57.10	13.03	(54.0)	ASP	63.62	14.39	(52.4)	Ho	56.28	11.33	(*)
D	57.52	12.08	(55.3)	TPA	49.25	11.29	(46.3)	OH	54.79	10.70	(56.8)
Hy	54.66	12.83	(54.0)	LSE	54.48	12.36	(50.2)	MAC	61.72	10.02	(56.8)
Pd	74.48	12.19	(61.5)	SOD	54.44	15.37	(50.3)	AAS	60.8	11.08	(53.1)
Mf	45.79	9.06	(46.6)	FAM	58.66	12.96	(51.6)	APS	46.18	10.26	(48.9)
Pa	64.03	14.80	(58.2)	WRK	52.07	12.08	(50.3)	GM	48.48	9.64	(*)
Pt	55.28	11.80	(55.3)	TRT	59.69	14.55	(51.5)	GF	38.28	8.76	(*)
Sc	64.43	13.83	(56.4)								
Ma	56.51	11.98	(52.9)								
Si	54.59	11.39	(50.7)								

Note: Normative means in parentheses from 2619 male offenders reported in Megargee (2000). * No data from Megargee (2000)

Validity scales. The validity scales were checked for elevations. Three individuals had F scores > 100. Their VRIN and TRIN scales were examined for evidence of Content Nonresponsiveness (CNR). All had valid VRIN and TRIN scores of ≤ 65. Given the potential for severe psychopathology in the sample, we allowed these profiles to proceed as part of our overall analyses. Six participants had Fb scores ≥ 100. There is no recommended cutoff for correctional settings; however, Butcher et al. (2001) recommend cutoffs of ≥ 90 for nonclinical settings and ≥ 110 for clinical settings as possible invalid profiles. Therefore, we split the difference for a prison setting and examined the gap between of the F and Fb scores. Two profiles were ≥ 30 points difference. Megargee (2006) notes that elevations on Fb could be an indication of affect or mood disorders. These two profiles are consistent with this possibility when examining the clinical scales. One profile was a 7-8

and the other had a clinically elevated 2. Considering this and their valid VRIN and TRIN (one 57F and one 57T) scores, we also retained these profiles in our analyses.

Only one profile had an Fp score greater than 100 (Arbisi & Ben-Porath, 1995). His profile was also elevated for the L scale, but his overall F was much lower and both the VRIN and TRIN were valid. This individual may likely have exaggerated his degree of psychopathology, but there was no indication of CNR. Seven inmates had L scores greater than 65. Further examination revealed that all TRIN scores were ≤ 65. Still, five other inmates had scores equal to 65 (only one had a TRIN greater than 65 at 71F). Therefore, we must consider that our mean data was a slight underestimation of general psychopathology. One inmate had an S score of 70 (all others were valid at 69 or less). Again, examination of this particular inmate's other validity scores suggested the profile is valid.

Basic scales. The average male offender clinical profile is presented in Figure 1. As predicted, the average offender had the highest elevations on 4, 8, and 6. The average T scores for scale 4 were above the recommended T = 65 cutoff for a clinical elevation, while 6 and 8 fell just short at 64. Still, the average pattern shows these to be the three highest points on the profile.

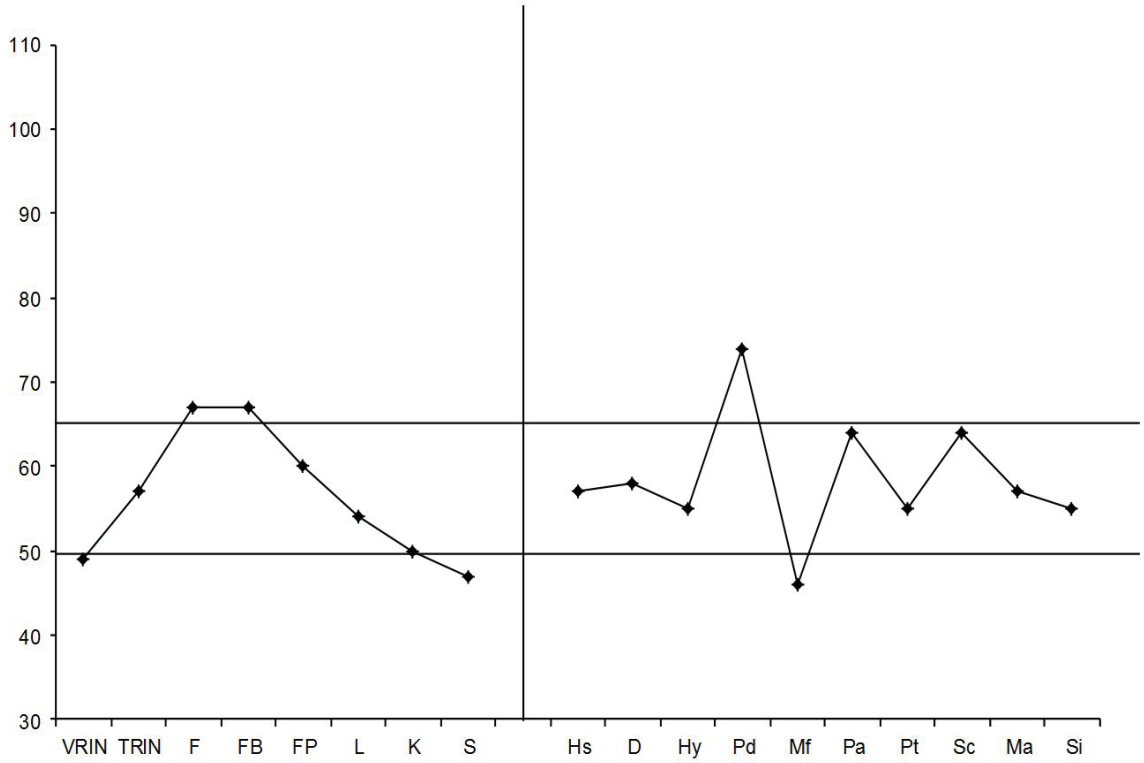

Figure 1. Mean MMPI-2 Validity and Clinical Scales Profile for All Male Serial Homicide Participants (*N* = 61).

We analyzed the two highest scales, regardless of whether the T was clinically elevated and regardless of the gap in T scores. The largest grouping of participants (26.1%) had their highest two point codes as 4-6/6-4 (five of these participants had ties for the second highest scale with other scales). This was followed by 4-9/9-4 (8.2%), 4-3 (11.4%, one inmate had a tied second highest scale), and 4-8/8-4 (13.1%; three of these participants are also included in the 4-6/6-4 count, as their profile was 4-6-8 with 6 and 8 being tied). Megargee (2006) notes that only 8% of male offenders show the 4-6/6-4 code, 5% show 4-3/3-4, and 4% show profiles as 4-8/8-4. These numbers are slightly lower from our findings. However, Megargee found 13% of offenders to show a 4-9/9-4 code type.

Harris-Lingoes subscales. Because of the elevations in scales 4, 6, and 8, we examined the Harris-Lingoes subscales for each point code. The results of the mean raw scores and T scores are presented in Table 2. The Harris-Lingoes scales are designed for further analyses only when there is a clinical elevation in the parent scale. Therefore, the means and Ts are also presented for cases with scores ≥ 65 for the three scales, along with percentage of those with elevations $T \geq 65$ for each Harris-Lingoes subscale. All scores were higher than the average prison sample presented by Megargee (2006), but a few are of particular note. Scale 4 elevations were particularly explained by Authority Problems (Pd2), with nearly 82% of the killers having T scores ≥ 65. Scale 6 was clearly defined by Persecutory Ideas (Pa1) with 84% scoring ≥ 65. Finally, Scale 8 seemed best explained by Emotional Alienation (Sc2) and Lack of Ego Mastery, Conative (Sc4). More than 66% of those with elevations on Scale 8 had T scores ≥ 65 on these two Harris-Lingoes subscales.

Table 2.

Mean Harris-Lingoes Subscales for All Male Serial Homicide Participants ($N = 61$).

Subscale	All Participants		Elevated		
	Raw	T	Raw	T	% ≥ 65
Scale 4 – Psychopathic Deviate					
Pd1 – Familial Discord	3.43	61	4.09	65	54.5
Pd2 – Authority Problems	6.00	67	6.11	67	81.8
Pd3 – Social Imperturbability	4.33	53	4.23	52	*
Pd4 – Social Alienation	6.84	65	7.45	69	59.1
Pd5 – Self-Alienation	6.41	64	7.00	67	61.4
Scale 6 – Paranoia					
Pa1 – Persecutory Ideas	5.21	71	7.60	86	84.0
Pa2 – Poignancy	2.93	54	4.32	64	52.0
Pa3 – Naiveté	4.10	47	4.04	46	04.0
Scale 8 – Schizophrenia					
Sc1 – Social Alienation	5.38	61	8.41	73	63.0
Sc2 – Emotional Alienation	2.41	63	3.70	76	77.8
Sc3 – Lack of Ego Mastery, Cognitive	2.30	56	3.70	64	44.4
Sc4 – Lack of Ego Mastery, Conative	3.52	58	5.89	70	66.7
Sc5 – Lack of Ego Mastery, Defective Inhibition	1.72	52	2.52	58	37.0
Sc6 – Bizarre Sensory Experiences	3.67	59	5.59	68	59.3

Note: Elevated *n*'s Scale 4 = 44, Scale 6 = 25, Scale 8 = 27. *No score will generate a T greater than 65 for Pd3.

Content scales. MMPI-2 content scales had two scales of note for the mean profile presented in Figure 2: Depression (DEP) with a mean T of 62 and Antisocial Practices (ASP) with a mean T of 64. Our second hypothesis was confirmed by the latter finding. Of our sample, 37.7% had a DEP score ≥ 65. This is more than 50% higher than the percentages of the average offender sample (23%; Megargee, 2006). Also substantially higher than the sample of correctional inmates reported by Megargee was the ASP score of our offenders (44.3% score ≥ 65). Megargee reported only 18% of correctional offenders in his sample had a T of 65 or higher. These elevations coincide with the high scores on scale 4. However, to explain the low numbers of clinical deviation in ASP compared to scale 4, Megargee argued that his offenders minimized the extent of the social deviance resulting in false negatives. Our participants seemed more forthcoming about their actions.

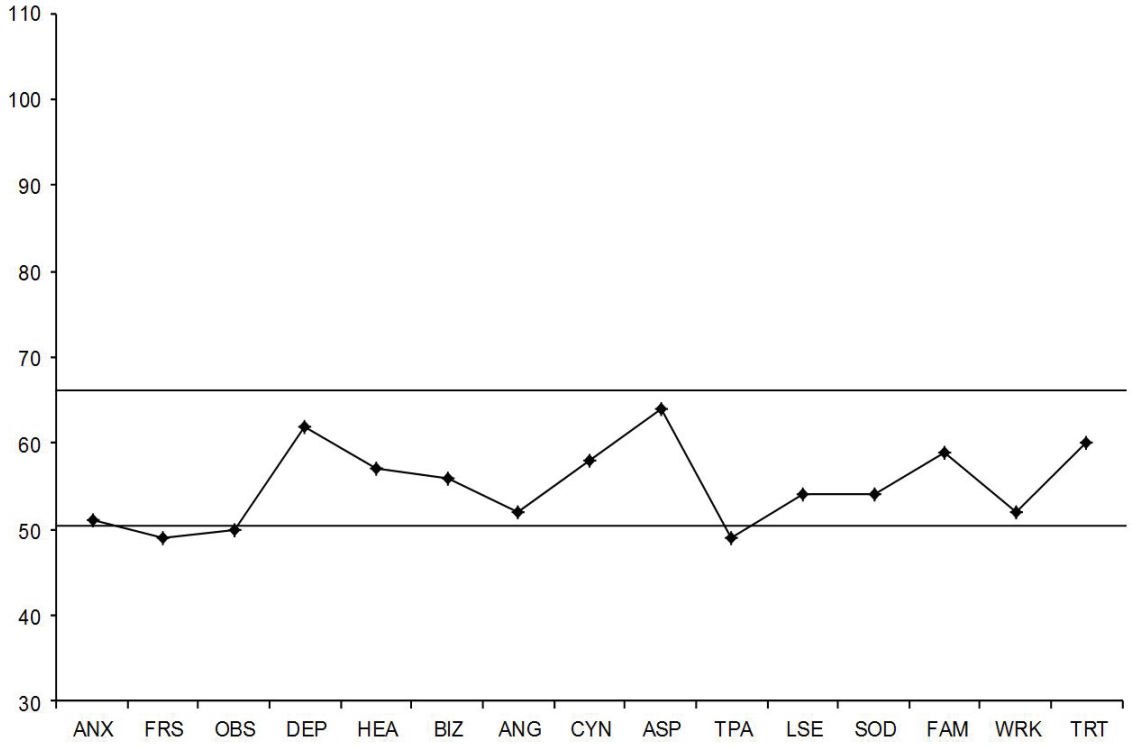

Figure 2. Mean MMPI-2 Content Scales Profile for All Male Serial Homicide Participants ($N = 61$).

Supplementary scales. Mean T scores for the supplementary scales of the MMPI-2 are presented in Figure 3 and the Personality Psychopathology Five (PSY-5; Harkness, McNulty, & Ben-Porath, 1995) mean raw scores, as well as their intercorrelations are presented in Table 3. The Marital Distress (Md) mean T was elevated at 65. Since nearly half of our sample (49.2%) were married, divorced, or separated, this was not a surprise given their incarceration status. Dominance (Do) and Social Responsibility (Re) had mean T scores less than 40, but this is not very different from other correctional samples (Megargee, 2006). The other supplementary scale with a T less than 40 was the Gender Role-Feminine (Gf). Two-thirds (67.2%) of our participants had scores ≤ 40, which means serial murderers perceived themselves as significantly more stereotypically masculine than other correctional samples, as Megargee found only 17% scoring at or less than 40. Contrary to our expectations, O-H was not elevated in the majority of our sample. Only 24.6% of our sample had T scores at or above 65. This is slightly less than Megargee's (2006) reported percentages.

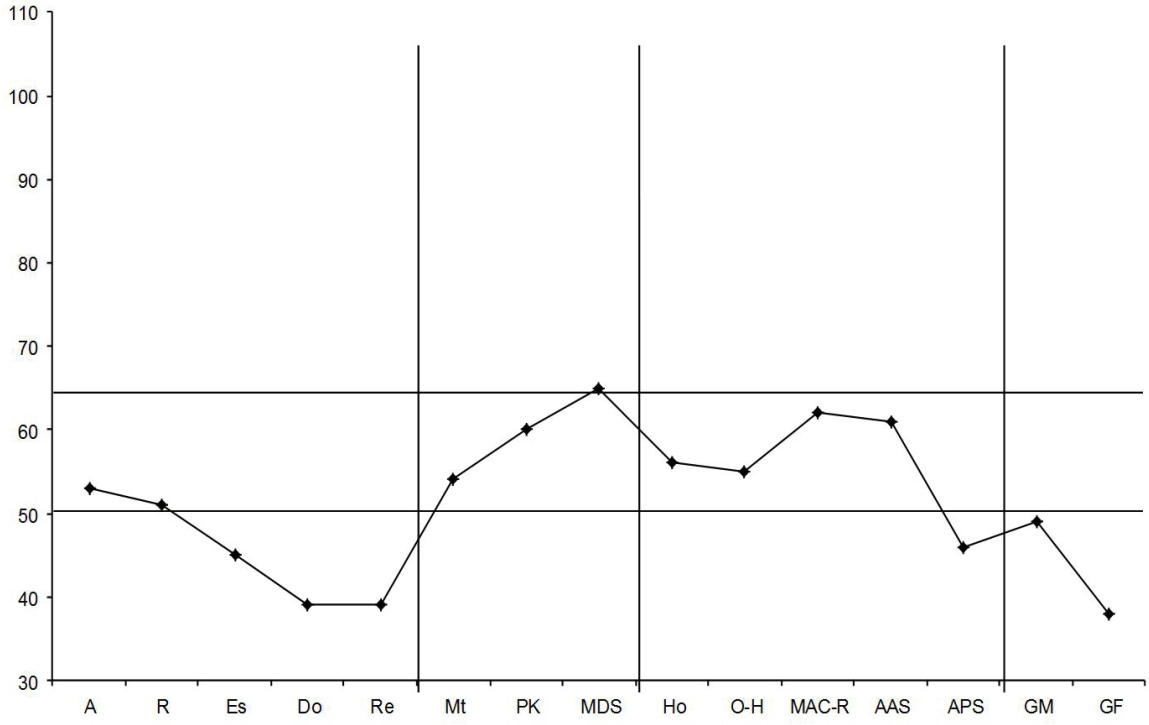

Figure 3. Mean MMPI-2 Supplementary Scales Profile for All Male Serial Homicide Participants ($N = 61$).

Table 3.

PSY-5 Intercorrelations and Mean Raw Scores for All Male Serial Homicide Offenders.

Variable	1	2	3	4	5	Mean (SD)	(Normative)
1 AGGR	-	.34*** (.34)	.28** (-.34)	.40*** (.23)	-.28** (.32)	9.33 (3.25)	(8.20)
2 PSYC		-	.05 (-.18)	.52*** (.52)	-.04 (-.05)	6.27 (4.41)	(3.58)
3 DISC			-	.26** (-.13)	.24* (-.17)	19.30 (4.71)	(15.01)
4 NEGE				-	.22* (-.18)	10.98 (6.80)	(9.44)
5 INTR					-	13.65 (6.63)	(22.98)

Note: AGGR = Aggressiveness, PSYC = Psychoticism, DISC = Disconstraint, NEGE = Negative Emotionality/Neuroticism, INTR = Introversion/Low Positive Emotionality. One tailed, * = $p < .08$, ** = $p < .05$, *** $p < .01$. Normative data, both correlations and means, from Harkness et al. (1995) are in parentheses. The correlational data from Harkness et al. include both males and females, while the means here are from males only.

The PSY-5 scores of our sample were compared to the normative male sample scores reported by Harkness and colleagues (1995). The scoring of the Disconstraint (DISC) and Introversion/Low Positive Emotionality (INTR) were reversed (Harkness, McNulty, Ben-Porath, & Graham, 2002) and originally reported as Constraint (CONS) and Positive

Emotionality/Extraversion (EXTR) (Harkness et al., 1995). Our sample's mean CONS was 10.20 (*SD* = 4.26) and mean EXTR was 20.46 (*SD* = 6.12). One sample t-tests show the killers to be significantly different from the Harkness et al.'s normative male sample on every subscale. The murderers were higher in Aggression (AGGR), t (60) = 2.71, p = .009, d = .70, and Psychoticism (PSYC), t (60) = 3.82, $p < .001$, d = .99. Negative Emotionality/ Neuroticism (NEGE) only approached significance, t (60) = 1.77, p = .082, d = .46. The killers had significantly lower scores for CONS, t (60) = -8.82, $p < .001$, d = -2.28, and EXTR, t (60) -3.22, p = .002, d = -.83.

Because of our small sample size, we report intercorrelations at the .08 significance level and below. The subscale AGGR was significantly correlated with the other four PSY-5 scales. Only the PSYC scale failed to correlate with all other scales. The correlational pattern visually appears similar to that of the combined gender normative sample in Harkness et al. (1995).

Megargee System

Fifty eight serial offenders could be classified into the ten male Megargee classifications. Two inmates were unclassifiable and one participant scored an 83 on the L scale and was not classified. The results of the classification are presented in Table 4. Recall that our prediction was that Charlie would be the largest group. However, the largest cluster in our sample were Deltas, followed by How, Charlie, and Item. Megargee (2006) notes that Charlie and How have many overlapping characteristics of the MMPI-2 profiles. The only other designations of any notable count were Foxtrot and George. The remaining profiles constituted no more than four percent of participants each.

Cluster Analysis

After examining the agglomeration coefficients, it was determined that a two cluster solution was the best fit for the data. The first cluster (n = 46) has a profile resembling the Delta group. Only Scale 4 was elevated with a mean T of 70.61. The other clinical scales were flat. The second cluster (n = 15) showed a considerably more disturbed profile. The profiles for both clusters are presented in Figure 4. As hypothesized, our research, like Spaans et al. (2009), suggests a disturbed and non-disturbed psychological personality profile. The disturbed cluster had clinical elevations on eight of the ten clinical scales. The three highest scales were 4 (Mean T = 86.33), 6 (79.07), and 8 (80.80). The 15 participants fit three of the Megargee classifications: How (9), Charlie (5), and Delta (1). Seven of these inmates committed two murders, while the other eight had three or more murders.

Table 4.

Megargee Classifications of the Male Serial Homicide Offenders.

Category	*n*	%	*Megargee Norm %*
Able	1	1.7	17
Baker	1	1.7	4
Charlie	7	11.7	9
Delta	20	33.3	10
Easy	2	3.3	7
Foxtrot	5	8.3	8
George	4	6.7	7
How	10	16.7	13
Item	6	10.0	19
Jupiter	2	3.3	3
Unclassifiable	2	3.3	
Total	60	100.0	

Note: Megargee normative proportions taken from Megargee (2006).

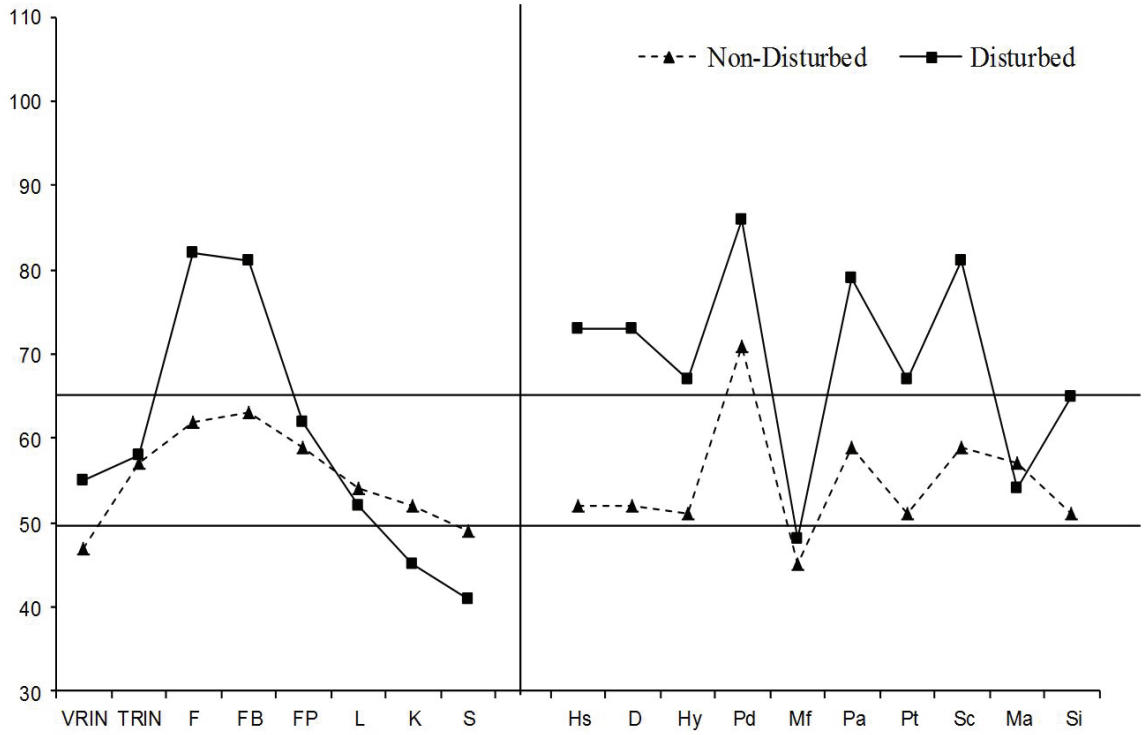

Figure 4. Mean MMPI-2 Validity and Clinical Scales Profile for the Disturbed Cluster (*n* = 15) and Non-Disturbed Cluster (*n* = 46).

The content and supplementary scales showed numerous differences for the two groups as well. Of note, the disturbed group had mean T scores ≥ 65 for six content scales DEP (75.60) Negative Treatment Indicators (TRT; 72.53), Social Discomfort (SOD; 66.47), ASP (67.07), Health Concerns (HEA; 72.33), and Family Problems (FAM; 66.67). Only one of these (ASP) were not significantly different from the non-disturbed cluster, t (59) = -1.07, p = .289, d = .28, all other t's (59) ≥ -2.93, p = .005, d = .76. There were three supplementary scales with T scores ≥ 65: Md (78.27), College Maladjustment (Mt; 67.93), Posttraumatic Stress-Keane (PK; 74.4). All three were significantly higher in the disturbed group, smallest significant t (59) = -4.93, p < .001, d = 1.28. Finally, we examined the PSY-5 scales for possible differences between the disturbed and non-disturbed. Three scales had significant differences, NEGE, t (59) = -3.26, p = .002, d = .85, and INTR, t (46) = -4.81, p < .001, d = 1.25, and PSYC, t (59) = -2.30, p = .025, d = .60, with significantly higher means in the disturbed group.

Murders

MMPI-2 clinical scale raw scores were entered into a regression analysis to predict the number of confirmed and suspected victims all perpetrators killed. We controlled for the length of incarceration. For confirmed murders, both regression steps were significant for the model. Looking at the individual predictors, the length of incarceration was significant in the first step, B = -.107, SE = .053, t = -2.02, p = .048, and second step, B = -.158, SE = .055, t = -2.88, p = .005, suggesting that more kills were related to earlier incarcerations. The model was significant overall, F (11, 49) = 2.29, p = .024. Two of the 10 clinical scales were valid predictors. Scale 0, Social Introversion, was negatively related to the number of victims, B = -.143, SE = .064, t = -2.24, p = .030. In addition, Scale 1, Hypochondriasis, was also negatively related, B = -.146, SE = .066, t = -2.22, p = .031. When examining the suspected number of victims, length of incarceration was again significant, B = -.156, SE = .058, t = -2.68, p = .010. However, none of the ten clinical scales were significant in the second step of the regression and the new model was not significant, F (11, 49) = 1.27, p = .272.

As discussed earlier, there is a controversy about the number of murders constituting a serial killer. Therefore, exploratory analyses were conducted comparing the confirmed serial murderers with three or more victims (n = 42) and those with only two murders (n = 19). The sample was tested for possible differences of the clinical scales' T scores. Scale 0 was significantly higher in the two victim group (M = 59.79 vs. 52.24 in the three plus group), t (59) = 2.50, p = .015, d = .65. Furthermore, differences in Scale 1 approached significance with the two victim group (M = 61.63) again being higher than the three plus group (M = 55.05), t (59) = 1.87, p = .067, d = .49.

Nearly half (n = 27) of these serial killers used a gun in at least one of the murders, while the others used methods such as stabbings, strangulations, and beatings with blunt objects. Entering the clinical scales into a logistic regression analysis predicting use of a gun or not resulted in a single notable item. The killers who used more personal methods of murder had higher scores on Scale 5, Masculinity/Femininity, B = .072, SE = .039, *Wald*

(1) = 3.45, p = .063. This suggests that killers with a proclivity to personal methods have an orientation toward masculine actions.

DISCUSSION

The present research tested the largest known research database of serial murderers for psychopathologies and personality disorders. The results show that most are stricken by one form of psychopathology or another. Like the previous research discussed above (Craig, 2008; Nichols, 2006; Romo, 2009), this sample of killers present an average MMPI-2 profile code of 4-8-6, with virtually no difference in 8 and 6 and a gap greater than five points to the next scale.

Craig (1999) contends that the 4-6-8 code is suggestive of "a severe emotional disorder" (p. 87). He goes on to propose that such a profile is seen in those with a tendency to be easily upset, have alienated feelings, be suspicious and overly sensitive, and importantly, show a variety of paranoid symptoms. Craig also notes that these persons may rationalize anger with self-justifications, have poor judgment, sexual disturbances, and acute relationship difficulties. Groth-Marnat (2009) refers to this pattern as an individual who is psychotic, with a particular likelihood of paranoid schizophrenia or prepsychotic.

According to Graham (2000), the 4-8 MMPI-2 profile is indicative of those who do not fit into their respective environments. Furthermore, "they tend to be angry, irritable, and resentful, and they act out in asocial or antisocial ways" (p. 101). Their crimes tend to be vicious, assaultive, senseless, poorly planned and poorly executed. This is an individual who also demonstrates dysfunctional sexual behavior, including the use of prostitutes, being promiscuous, and sexual deviations. They also tend to avoid close relationships with others, lack empathy, and try to manipulate others. In addition, these profiles suggest individuals who "accept little responsibility for their own behavior, and they rationalize excessively, blaming their difficulties on other people" (p. 102). Megargee (2006) contends that these individuals are often abused as children and are doubtful of their masculinity. Treatment of such code types is difficult, there are many issues outside of the therapy, and the person is likely to act out in sessions (Megargee, 2006).

A 4-6 profile is telltale of an immature, narcissistic individual, who makes demands of others, but resents demands made of him or her (Graham, 2000). Graham also notes that such persons have repressed hostility and anger. Other traits also mirror psychopathic tendencies, such as accepting little responsibility for their actions, self-grandiosity, shallow emotional attachments, and emotional disturbances. Megargee (2006) also points out alienation from family and poor employment histories as traits of the 4-6/6-4 code. He also contends that these inmates are difficult to establish a rapport with and they will be alert for a perceived injustice. The inmates will also have a turbulent relationship with any therapy provider (Groth-Marnat, 2009). Future analyses of psychopathy in these inmates are warranted for proper determination.

Two other two-point profiles were notable in our data set. A 4-3 code suggests chronic feelings of anger and hostility, and a tendency to be acted out in violent ways (Craig, 1999). They allow hostility to build up and be directed through extreme aggression. Craig also posited, "they may have long periods of time where they demonstrate socially appropriate behavior, …but then they erupt in violence" (p. 67). Megargee (2006) notes that these offenders do well in correctional settings. Also of note, the 4-9/9-4 is a code for offender populations with a history of repeat crime and violence and many of the traits mirror the psychopathic individual as well. This code is also associated with antisocial and narcissistic personality disorders (Craig, 1999). Correctional staff should be acutely aware of the inmates' attempts to manipulate and con.

Thirty-three percent of our sample were Deltas according to the Megargee (2006) Classification system. This is considerably higher than the percent of such individuals in the correctional system and forensic mental health units. It is also different from the findings of Romo (2009). Psychologists are more likely to describe Deltas as "self-centered, self-seeking, active, impulsive, pleasure-seeking, reckless, irritable, strong, assertive, impatient, opportunistic, unscrupulous, sophisticated, rebellious, and aggressive" (Megargee, 2006, p. 231). These individuals are similar to the psychopathic personality. This is an individual who has markedly increased seriousness of criminal offenses and complex psychological problems (Megargee & Bohn, 1977). They are often difficult to deal with in correctional settings as they do not feel as though there are any problems that need attention. While we could not classify three participants, the Megargee system could classify the vast majority of offenders like other research with the original MMPI (Megargee & Dorhout, 1977) and the MMPI-2 (Megargee, 2006). Finally, Deltas are among the groups with inmates who are least likely to terminate criminal activity and they score among the worst for measures of recidivistic activities (Megargee, Carbonell, Bohn, & Sliger, 2001).

The cluster analysis produced two distinct profiles, one with marked personality profile disturbances and one with a single elevation of Psychopathic Deviance. This is a sharp contrast to the profile of the disturbed cluster, which shows marked elevations of scales 4, 6, and 8. The differences in the two clusters on content and supplementary scales are somewhat telling of the likely personality traits for the disturbed cluster. High scores on the disturbed cluster's content scales suggest that they have clinical depression symptoms, health problems, low self-esteem, social discomfort, and negative attitudes about treatment (Craig, 1999). The disturbed group's high scores on the PK scale suggests that they are experiencing a thought pattern that distresses, such as nightmares, insomnia, unwanted thoughts, and guilt (Craig, 1999). PSY-5 INTR was one of the largest differences and suggests that the disturbed cluster are unlikely to experience positive emotion and to be more introverted, depressive, pessimistic and non-hedonistic (Derksen, 2006; Harkness & McNulty, 2006).

The disturbed profiles were dominated by How and Charlie profiles in Megargee's classification system. Megargee et al. (2001) note that these two groups are the most deviant in the system, and they are in particular need of additional mental health evaluations. Charlies tend to have a history of violent offenses. Only offenders in group How are evalu-

ated higher than Charlies to have a propensity to violence. However, samples of group How do not tend to get into legal difficulties as early as others.

The development of psychopathology in murderers is an area that is substantially unknown. At what point does the seriously disturbed profile seen in murderers appear? Katz and Marquette (1996) studied the MMPI-A (Butcher et al., 1992) profiles of youths (age 16 to 23) convicted of first and second degree murder. When compared to nonviolent youth offenders and a control group of high school students, there were no profile differences on the MMPI-A. Furthermore, the mean scores showed no elevations in the murderer group. There are multiple possible explanations for the lack of differences. One possibility is the constitution of youth murderers. More specifically, the majority of this group consisted of gang members, a trait usually not found in serial killers. Thus, committing murders in such a context is not necessarily indicative of a psychopathology. Another possibility is that the psychopathology is not fully expressed, as the Pd and Pa subscales were the highest t scores but not in the elevated range. Finally, the juvenile murderers had been incarcerated for years and in receipt of counseling services. This may also account for the normal mean profiles.

Limitations and Future Directions

The project was collected via a mail survey. Such methodology dictates a series of concerns. First, the entire project is reliant on self-report at the inmates' convenience. This could be easily remedied by administering the measures in person. However, given the distance between the participants, this would be a costly and time consuming fix. A second possible issue with the data is the lengthy nature of the survey. The survey was estimated to take more than two and a half hours to complete. This could have lead to fatigue and a temptation to answer randomly. We compensated for this possibility by randomizing the scales. We are comforted by our participants' scores on the numerous validity scales, which show a pattern of acceptable responses for nearly all.

Like the limitation of Culhane et al. (2011), many of our participants had been incarcerated for a lengthy period of time. They may have had an opportunity to participate in therapeutic sessions, or the scores may be indicative of the psychopathology for a person who has experienced chronic incarceration.

Future research should focus on comparing the data from the current project to other offenders and non-offender samples. There was no comparison group in this project to determine any distinctions from other populations. Particularly, the data from single murderers would be a good comparison group. Those convicted of pre-meditated murder in a single occurrence may mirror those presented here. If so, it would be indicative of a person capable of serial murder, yet they were only stopped via the criminal justice system. Should the two groups have different psychological profiles, it may suggest that serial offenders have a greater psychological disturbance.

Other research may examine the current data and how these prisoners are similar or different to non-violent offenders, who are likely to be released on parole or receive probation. It is a difficult proposition for many to comprehend, but dozens of the killers

in our first round of tracking down participants were released from prison for one reason or another. Many prisoners have been incarcerated for decades and may have aged out of criminality, while others are far too risky for future violent acts to be released. Still, a battery of self-reported questionnaires is not going to be able to answer these issues. Thirty years ago Poythress (1979) pointed out that there was a consensus among researchers that no test is able to predict future violence, and he even discussed research's failure to identify past violence through testing. Furthermore, the same was true for an array of psychological tests. Poythress called it a common fault of clinical psychologists to expect an answer for legal questions from test data. These conclusions remain true today and our methodology does not allow for predicting the future.

Conclusion

The significant findings of the variable 'year of incarceration' in the confirmed and suspected kills regressions suggests, at least to us, that current methods of policing allow for earlier capture of serial murderers. Not surprisingly, the average serial murderer demonstrated a psychologically disturbed MMPI-2 profile. This fits our anecdotal expectations of what a killer *should* look like. However, the killers have remarkably different set of profiles and there is no one-size-fits-all approach to understanding their psychological state.

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ENDNOTES

1. The research papers using data from the National Center for the Analysis of Violent Crime (NCAVC) are not included in this summation. Dietz, Hazelwood, & Warren (1990) had 17 sexual sadist serial murderers in their sample, while Warren, Hazelwood, and Dietz (1996) had 20 in their analyses. However, the data collected came from "various" sources and not all data could be verified as directly gathered from the offenders.

2. The following states refused access for this research: CO, FL, GA, MD, NJ, NY, OH, OR, MA, MN, MS, TN, WA.