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MOTIVATION TO CHANGE IN SEX OFFENDERS: EXPLORING SEX OFFENDER TYPES

By

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ABSTRACT

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The current study examined two issues: First, this study examined how variations in psychopathology yielded clusters or types of sex offenders. Second, this study examined the clinical relevance of these clusters focusing on motivation to change and response to treatment. These issues were evaluated using the archival data of 228 convicted adult male sex offenders (81% with child victims; 19% with adult victims) who were assessed and treated at a local outpatient treatment facility while on probation or parole. Cluster analyses were conducted using both agglomerative and iterative methods, resulting in the formation of four clusters. The first cluster (N=86) displayed no clinical levels of psychopathology; even their level of antisocial behaviors and attitudes was not in clinical ranges. The second cluster (N=69) was characterized by antisocial behaviors and attitudes as well as hostility and mistrust of others. The third cluster's (N=36) psychopathology was defined by antisocial behaviors and a cunning, manipulative interpersonal style but not hostility or mistrust. The final cluster (N=37) had the most severe psychopathology, including elevated antisocial behaviors, depression, anxiety, paranoia or mistrust, and symptom exaggeration. Demographically these clusters differed in age of the offender ($p<.001$) and parenthood status ($p<.05$) but not in race, education, marital or employment status, or a range of offense and victim characteristics.

Next, this study analyzed motivation to change as a latent construct. Using structural equation modeling, the four subscales of the motivation to change

questionnaire served as the indicators predicting motivation to change. Results indicated a non-significant chi-square and good fit indices (Chi-square=2.97; df=2; p=0.23; GFI=0.99; CFI=1.00; RMSEA=0.05; BIC=46.40). Also, each of the four indicator paths were significant and in the expect direction. These results indicate that motivation to change does not occur in stages but rather can be better represented as unitary processes. To validate motivation to change as a predictor of treatment response, structural equation modeling was used to fit the latent construct as predictors of post-treatment response controlling for pre-treatment functioning. Motivation to change was significantly associated with treatment response (Chi-square=15.1; df=8; p=0.06; GFI=0.98; CFI=0.99; RMSEA=0.06; BIC=85.71) but the effect size was modest (beta <.30).

Finally, differences were evaluated between the clusters with regard to clinical variables including motivation to change, treatment attendance and completion, and a number of clinician-rated psychological variables assessed before and after treatment. Clusters differed on treatment attendance ($p<.01$) and motivation to change ($p<.05$) but not other variables. These findings provide partial validation to the clusters.

These results suggest that variations in psychopathology may result in the formation of distinct clusters of sex offenders. These offender clusters may not best be defined by their offense characteristics. However, the clinical differences between these clusters suggests that, regardless of their offense characteristics, the type and severity of psychopathology that these offenders display could have particular relevance for their motivation to change and attendance in treatment. A key next step is to evaluate whether those offenders with low motivation to change may benefit from motivational interviewing prior to treatment assignment.

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INTRODUCTION AND LITERATURE REVIEW

Sex Offending as a Societal Problem

Prevalence of sex offending. Sexual offending as used here refers to direct physical sexual assault of a child or adult woman by an adult man. It is a major societal problem not only because of the high incidence rates but also because of the sustained physical and psychological injury it causes the victims (e.g., Sommers et al., 2006). Statistical reports indicate that 18% of adult women are sexually assaulted during some part of their lives (15% completed assault; 3% attempted assault; Tjaden & Thoennes, 1998). However, these numbers are probably underestimates due to under-reporting (Tjaden & Thoennes, 1998). For children under the age of 18, estimates of sexual assault rates have reached as high as 44% (both attempts and completions; Greenfeld, 1997). Of this 44%, 15% were under the age of 12 and 29% were between the ages of 12 and 17 (Greenfeld, 1997). Evidences of sustained physical and psychological injury are numerous in the literature (e.g., Ahrens, Dean, Rozee, & McKenzie, 2008; Sarkar & Sarkar, 2006; Sommers, 2007; Sommers, Schaefer, Zink, Huston, & Hillard, 2001; Sommers et al., 2006). Thus, the problem is important.

The present study focused on male sex offenders. [1] An understanding of their characteristics may aid in treatment planning and reducing re-offense rates, assuming that current sexual re-offense rates can continue to decrease. Although researchers have been striving toward this goal for many decades (e.g., Bowman, 1938; Smith, 1924), it has not yet been achieved and new, innovative research is necessary to keep the field moving

[1] Because females compose only 1-2% of all sex offenders and are, therefore, understudied in the literature (Vandiver, 2002), the sample for the present study consists of only male sex offenders. Consequently, the literature review which follows describes studies with samples of male sex offenders only. Additional operational definitions of several of the concepts being used in this document can be found in the Methods section.

forward in this direction. In the United States there are more than 386,000 registered sex offenders (Adams, 2002). This estimate is increased from previous estimates which indicated that 234,000 sex offenders were under the supervision of correction departments around the country (Greenfeld, 1997). Of these sex offenders, 60% were under supervision in the community (i.e., on parole or probation), with the other 40% either in prison or acting under their own recognizance in the community (Greenfeld, 1997). These statistics imply that at least 60% of convicted sex offenders were in a position to re-offend against a member of the general public if they were not successfully rehabilitated or deterred. However, as with other crimes, not all sex offenders re-offend, which may suggest potentially important clinical differences among them. This variation among offenders may provide clues valuable to new interventions that may further reduce chances of re-offending.

Recidivism[2] *among sex offenders.* Sex offender re-offense rates are an ongoing concern in American communities. Although from one perspective recidivism may be "low" (see below), recidivism remains important to try to reduce further given the harm that these offenses cause (Sarkar & Sarkar, 2006). The present study assumes that factors which have not been empirically tested in sex offenders such as motivation to change may be key to understanding the variation in sex offenders' recidivism rates.

New laws have been developed and implemented in order to protect the public from sex offenders in the community (e.g., Megan's Law, 1996; Levenson & Cotter, 2005). Convicted adult sex offenders in the community must publicly register their

[2] *Recidivism* refers to the number of offenders who re-offended among a total number of offenders in a given time period. These re-offenses could be *violent*, in that they involve physical assault or *nonviolent* (e.g., theft). They could also be *sexual*, in that the offenders committed another sexually violent crime or *nonsexual* (e.g., domestic assault). In the present study, sexual offenses are conceptualized as a special type of violent offense.

name, address, crime(s), aliases, and photographs so that the public can access them at any time (Levenson & Cotter, 2005). Sex offenders cannot live close to schools nor have jobs involving children. They are mandated to treatment and, in many ways, are monitored more closely than other violent, non-incarcerated offenders (Levenson & Cotter, 2005). With these policies in place, a recent study revealed that, after an average follow-up period of five years, sex offenders' general recidivism rate (i.e., including violent and nonviolent, sexual and nonsexual offenses) was 28.2%, about the same as a 27.2% general recidivism rate for other types of criminals (Craig, Browne, Beech, & Stringer, 2004). When considering sexual recidivism specifically (i.e., sexual offenses only), sex offenders' rate was 11.8%, compared to a 0% sexual recidivism rate for nonsexual, nonviolent offenders. Though these rates may appear low (i.e., the majority of the sex offenders in this follow-up study did not recidivate), the actions of the other sex offenders reduce the physical and mental health of their victims and their victim's families as well as the health and safety of the surrounding community. Examining the variation in sex offenders' behaviors and the factors associated with it may assist in understanding how to further reduce this recidivism rate, assuming this goal is attainable. The present study was not able to examine recidivism as an outcome because those data were not available. However, future studies should consider recidivism as a treatment outcome variable. Instead, the present study focused on sex offenders' short term response to treatment through measures of their attendance, engagement in treatment, and measures of pre- and post-psychological functioning.

Sex offenders' response to treatment. In light of these figures and the devastation of even a single sexual offense to victims and society (Levenson & Cotter, 2005),

treatment of sex offenders has been a long-standing interest. Observers are continuing to call for improvement to programs and more treatment response studies in order to gain information that may help target those sex offenders who have a worse treatment prognosis and higher recidivism rate (Ward & Gannon, 2006). However, these observers are assuming that improving treatment programs or developing new innovative programs are the keys to targeting the seemingly treatment-resistant sex offenders. The present study does not accept that assumption. Rather, the present study assumes that not all sex offenders will respond successfully to treatment (regardless of its design) and that having knowledge of the internal mechanisms of the individual offender (e.g., motivation to change, psychopathology) may provide information about how each person may respond to any treatment approach. This assumption emerges from a more idiographic approach than has been used in the literature previously and attempts to embrace the variation and heterogeneity of sex offenders' response to treatment rather than assuming that, if the treatment is designed well enough, all sex offenders should respond equally well to it.

Several treatment options are available to sex offenders, including psychopharmacology (Hill, Briken, Kraus, Strohm, & Berner, 2003), chemical castration (Miller, 2003), motivation-enhancement therapy (Miller, Zweben, DiClemente, & Rychtarik, 1992), and novel rehabilitation approaches (Ward & Gannon, 2006). However, cognitive-behavioral therapy (CBT) has had the most success in rehabilitating many sex offenders (Beech & Fisher, 2002). As with traditional CBT, CBT with sex offenders focuses on maladaptive cognitions and behaviors; however, there are a few modifications that tailor the treatment to this group. The most tailored and comprehensive CBT treatment programs for sex offenders, which usually take a group

therapy format (Barker & Beech, 1993), typically include elements of each of the following: 1) behavior therapy to reduce inappropriate and increase appropriate sexual arousal; 2) prosocial skills training and development; 3) restructuring cognitive distortions and enhancement of empathy for the victim; and 4) relapse prevention (Abel, Osborn, Anthony, & Gardos, 1992). (Details describing how each of these strategies is implemented are provided in Appendix G).

Using these techniques with sex offenders has shown some promise in reducing recidivism rates. For example, in two studies, while recidivism rates (for sexual and nonsexual offenses) for untreated sex offenders range from 22% to 27% (Marques, Day, Nelson, & West, 1994; McGrath, Hoke, & Vojtisek, 1998), the recidivism rates for sex offenders treated with cognitive-behavioral therapy ranged from 8% to 19% (Marques et al., 1994; McGrath et al., 1998) over a five- to six-year follow-up period. However the apparently promising findings of both of these studies are deceptive: the sex offenders were not randomly assigned to treatment or control groups. Rather, the groups comprised offenders who volunteered for treatment and those who refused (Marques et al., 1994; McGrath et al., 1998). Therefore, the treatment's real effects apart from pre-existing offender characteristics (such as motivation or degree of psychopathology) were unclear. Those sex offenders who sought treatment may have been more intrinsically motivated to stop offending than those who did not seek out treatment.

Appropriately addressing the issue of motivation in sex offenders would require a study of a group of sex offenders who did not volunteer for treatment but, rather, were assigned to a treatment program, regardless of their preference. Having a representative sample of offenders in a study may help in the identification of the types of offenders

who are actually ready for participation in a specialized sex offender treatment program and, thus, ready for release to the community versus those who may need to remain in prison for longer periods or be assigned to motivation-enhancing treatment. Therefore motivation becomes one of two main foci in the present study (psychopathology being the other focus). Before continuing it is necessary to clarify the conceptualization of motivation to change as used in the present study.

MOTIVATION TO CHANGE IN SEX OFFENDERS

Motivation to change may be one factor important to clients' participation and success in treatment (Brogan, Prochaska & Prochaska, 1999). For this study, *motivation to change* specifically refers to sex offenders' self-reported intrinsic desire to terminate their maladaptive sexual behaviors (modified from Blanchard, Morgenstern, Morgan, Labouvie, & Bux, 2003). In studies on sex offenders, motivation to change has been largely overlooked. It has too often been equated with the very different concept of motivation for *treatment*. *Treatment* motivation is confounded by *external* motivating factors such as early release from prison if the treatment program in completed successfully (Lanyon, 2001). Therefore, while these two concepts are likely correlated, they are not the same. Equating them may lead to misinterpretations of sex offenders' intentions in treatment. In order for this research to move forward, it is important to question the assumption that all sex offenders are intrinsically unmotivated to change (Kear-Cowell & Pollack, 1997). Variation in intrinsic motivation (hereafter, "motivation") has been postulated as one reason why treatment responses are variable with this population (i.e., some succeed well in treatment and others do not; Tierney & McCabe, 2002). However, little is known clinically about variations in or determinants of sex offenders' actual desire to change their maladaptive sexual behaviors (Drapeau et al., 2003; Terry & Mitchell, 2001).

Sex Offenders' Heterogeneity: Psychopathology, Motivation, and Treatment Responses

Heterogeneity in Psychopathology and Motivation. Sex offenders may be heterogeneous in a variety of areas, including psychopathology (Ahlmeyer et al., 2003;

Schlank, 1995).[3] To examine the heterogeneity of sex offenders, one study identified several different sex offender offense "pathways" (i.e., the interacting internal and external factors which may influence their choices in committing an offense; Hudson et al., 1999).[4] Though they did not measure psychopathology per se, these authors did describe internal factors of the offender (e.g., affect, cognitions) and found they were related to different sexual assault styles (e.g., impulsive, planned) and to different levels of motivation to change. A unique feature of this model as it applies to my study is that these authors directly mention motivation to change as an integral part of the post-offense thought process and make assumptions about variation in motivation to change in relation to variation in the offense process.

The offense "pathways" model was derived from qualitative data in a method known as *grounded theory* (Hudson et al., 1999). In their study Hudson and colleagues qualitatively coded the verbal accounts of the offenses of 86 incarcerated sex offenders (sex offenders against adults [N=14] and sex offenders against children [N=72]) in order to derive offense types composed of affect, cognition, and behavior.[5] The results indicated eight types—three major and five minor types. Because 75% of the sampled sex offenders were categorized in the three major types (Hudson et al., 1999), only those types are described here.

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[3] In the present study, *psychopathology* refers to patterns of psychological disturbances often reflected in maladaptive behavior (Hall & Hirschman, 1991).

[4] Though the authors describe their model in terms of "pathways" which implies that any sex offender could use any pathway to offend, the description of these "pathways" actually sounds more like a "type" which implies that certain sex offenders offend in a specific manner only. The present study assumes that the authors "pathways" are actually "types" of sexual offenders.

[5] These methods were not clustering techniques. The descriptions of the offense were coded on six points relating to a theoretical sexual offense chain which was developed in a previous study (Ward, Louden, Hudson, & Marshall, 1995). After coding the descriptions, they matched the resulting offense profiles to the theoretical stages on conceptual rather than empirical grounds.

The first major type, comprised of 33% of the sample, was characterized by the offender having positive affect prior to and during the offense (e.g., feeling excited, powerful, and/or loved; Hudson et al., 1999). The offender then devises a specific plan for the assault (e.g., getting the children away from their mother; planning to tie up the woman) and expresses an overt desire to have sex with the victim. During and after the sexual assault, the offender has a distorted belief in the assault being consensual sex (e.g., "she was my partner") and creates a positive reconstruction or evaluation of the offense after it happens (e.g., "she wanted to have sex"). Finally, the offender appears to express low motivation to change possibly because he has justified the offense as something both he and the victim desired. Of the sex offenders characterized in this type, 82% were sex offenders against children and 18% were sex offenders against adults, which is similar to the base rate for the sample (prior paragraph). Based on these offenders' affective presentations, level of cognitive distortions, and lack of motivation to change, the authors characterized this group as "appetitively-driven" to offend (i.e., they had an explicit desire to offend and found ways to do so; Hudson et al., 1999).

The second major type, comprised of 16% of the total sample, was characterized by the offender experiencing negative affect prior to the offense (e.g., depression, loneliness) and then devising a specific plan for the assault (Hudson et al., 1999). During and after the offense, the offender has an "energized," positive affect (e.g., gratification, power, excitement). Also, rather than conceptualizing the offense as being consensual and mutual, the offender focuses on having met his emotional and/or physical needs and does not consider the victim's feelings during or immediately after the offense. The offender has a negative evaluation of the offense after it happens (e.g., disgust with

himself, regret, empathy for victim) and an increased motivation to change. Of the offenders characterized in this type, 86% were sex offenders against children and 14% were sex offenders against adults (Hudson et al., 1999), again, similar to the base rate for the sample.

The third and final major type, comprised of 24% of the total sample, was characterized as having negative affect (e.g., depression, anger) throughout the entire offense process (i.e., starting before and ending after the offense; Hudson et al., 1999). They do not experience any positive affect during the offense, unlike the first and second types of offenders. Also unlike the first and second types, this type was characterized by impulsive offending without the degree of planning in the other two groups. That is, sex offenders in this type were more likely to commit sexual assault while committing another offense such as larceny rather than explicit planning to seek out and victimize someone (Hudson et al., 1999). Finally, this type involves the offender negatively evaluating the offense after it happens and expressing increased motivation to change the offending behavior. Of the offenders in this category, 67% were sex offenders against children and 33% were sex offenders against adults (Hudson et al., 1999). When considering the base rates for the sample, these results indicate that sex offenders against adults are slightly more likely to be categorized in this pathway than are sex offender against children.

The major strength of this model as it pertains to the current study is that it incorporates the offenders' expressed motivation to change as a part of the offending process or cycle. It connects motivation to change to other offense processes (e.g., affect, impulsivity) and does so using empirical means (Hudson et al., 1999). This model is

particularly relevant to the current study because it suggests that motivation to change may differ depending on the psychological characteristics of the sex offender. The results of this study provide some support for the hypothesis that psychopathology may have a relationship with motivation to change.

Heterogeneity in Motivation and Treatment Responses. Motivation to change may also be related to treatment response. Tierney and McCabe (2002) hypothesized that treatment participation/attendance, treatment behavior (e.g., implementation of relapse prevention strategies), treatment completion, and recidivism are each associated with motivation to change. Other authors have made similar assertions. Looman and colleagues (2005) reported that offenders with low motivation to change were more likely to withdraw from treatment. They also reported that motivation to change is associated with other treatment behaviors, including attendance and participation in treatment, use of relapse prevention strategies, and recidivism. While these assertions are largely based on anecdotal evidence, one formal study provided initial empirical support of a relationship between motivation to change and treatment responses (Barrett, Wilson, & Long, 2003). In a sample of incarcerated sex offenders in a specialized treatment program, two features of motivation to change (i.e., admission of guilt and accepting responsibility) were both associated with more successful treatment responses (Barrett et al., 2003). However, one limitation of this study is that motivation to change and treatment response were both coded by the sex offenders' therapists. Thus, the data source for both variables was confounded: therapists may have been biased toward seeing more motivation in clients who they believed improved.

Thus, taking this information together, one may make two speculations. The first speculation is that variations in internal factors of the offenders such as psychopathology may be lawfully organized into patterns, as was indicated in the Hudson et al. (1999) study. One could also speculate that the factors associated with variation in offense patterns include variation in motivation to change. Variation in motivation to change may, in turn, be related to different treatment responses in sex offenders.

Paralleling the Sex Offending and Substance Abuse Literatures to Conceptualize Motivation

The conceptualization for motivation to change in the current study drew upon the long-standing efforts to develop treatments for addictive behaviors such as alcohol or drug use (Blanchard et al., 2003). Carrying the substance abuse model forward to sex offending admittedly carries some hazards. For example, one potential concern of paralleling sex offending to substance abuse is that, if overemphasized, sexual offending can be viewed as an addictive behavior out of the offenders' control. This is generally not a viable model for sexual offending. For one thing, it could imply that it absolves the sex offender of responsibility for his actions, something which would be troubling to say the least. Further, the motivations behind sex offending may be quite different from those involved in substance abuse. Therefore, the present study does not conceptualize sexual offending as an addictive behavior. Rather this analogy from the addiction literature is simply used as a way to begin to access the concept of motivation to change in a sample of sex offenders, in the absence of alternative and perhaps more appropriate measures that might be more directly applicable to sex offending. The current motivation to change measure is thus seen as a first step attempt.

The present study was not the first to draw upon the substance abuse model of motivation to change (e.g., Mann, 1996 as cited in Ginsburg, Mann, Rotgers, & Weekes, 2002). Unfortunately, the researchers who first made the connection between these two bodies of literature did so as a result of conceptualizing sexual offending as an addictive behavior (George & Marlatt, 1989). As sex offending is no longer largely conceptualized as an addictive behavior, current rationale for drawing upon the substance use model of change is the similar rate of relapse in substance abusers and sex offenders as well as the difficulty these populations have in beginning and maintaining change (Ginsburg et al., 2002). However, these two bodies of literature differ substantially in the conceptualization of their respective maladaptive behaviors in that sex offenders are not psychologically or physiologically dependent on sex offending like substance abusers may be dependent on drugs or alcohol. Further, in substance abuse, often the victim who suffers the most is the abuser himself. However, in sex offending, the victims are innocent people in the community. Because of these differences between the behaviors, the sources of motivation to change these behaviors will likely differ substantially depending on which behavior is being discussed. Thus, this parallel between the literatures is quite limited and several concerns can be raised. More discussion will be given to this topic in the Conclusions and Discussion section. The current study uses the work in the substance abuse literature simply as a starting point in the absence of alternatives. It is hoped that further research and understanding of motivation in sex offenders will lead to a better conceptualization of this construct.

With these caveats in mind, what can be drawn from the substance use literature regarding motivation to change? Substance use researchers long ago expanded their focus

from the substance-abusing behaviors themselves to methods of changing those behaviors, with a particular focus on the psychological components associated with that change process (Blanchard et al., 2003). Among the key developments from this research was the Trans-Theoretical Model of Behavior Change (TTM; Prochaska & DiClemente, 1982).

Parallels between the substance abuse literature and the sexual offending literature have been drawn mostly in the form of relapse prevention models which focus on the behavioral interventions that may result in a cessation of sexual offending (e.g., Laws, 2003; Price, 1999). However, these models may not explicitly incorporate strategies to increase motivation to change among offenders (e.g., Price, 1999). More recently the parallels between these two bodies of literature have expanded to include models of motivation to change, including the TTM (Tierney & McCabe, 2002, 2005). Although the motivation to change model needs some conceptual changes and, of course, empirical support to successfully apply to sexual offending, it appears to provide a suitable foundation for the conceptualization of sexual offending as a behavior which is difficult to change and for which motivation would be an important component in changing, analogous to substance abuse.

The Stages of Change from the TTM and Sex Offenders. The TTM[6], as applied to sex offenders, served as the guiding model of motivation to change for the current study. The central constructs of this model are the Stages of Change, Processes of Change, and Decisional Balance.[7] The focus in this study was on the Stages of Change which,

[6] Figure A1 in Appendix A illustrates the theoretical flow of this model, the details of which are beyond the scope of this study.

[7] Detailed descriptions of the Processes of Change and Decisional Balance as well as additional background information on the origins of the Trans-Theoretical Model can be found in Appendix B.

according to the TTM, include the stages Pre-Contemplation, Contemplation, Preparation, Action, and Maintenance.

Tierney and McCabe (2005) attempted to modify the TTM to apply it to sexually offensive behavior consistent with the suggestions of previous researchers (e.g., Kear-Cowell & Pollack, 1997). These modifications are followed here. They suggested that the Pre-Contemplation process represents sex offenders' degree of strong denial or minimization of their maladaptive sexual behaviors (Kear-Colwell & Pollock, 1997; Tierney & McCabe, 2005). The Contemplation process involves the sex offender recognizing his sexual behavior as maladaptive and acknowledges limited desire to want to change that behavior (Tierney & McCabe, 2005). Given the difficulty that sex offenders have in changing their behaviors (Tierney & McCabe, 2005), conceivably this process will occur to some extent throughout the course of treatment (Prochaska et al., 1992). The Preparation process may lead sex offenders to think more critically about their behavior and make a concrete decision to change their behavior (Tierney & McCabe, 2005). However, in this conception the offenders do not start making concrete behavior changes until their Action processes are activated (Kear-Colwell & Pollock, 1997; Tierney & McCabe, 2005). Lastly, the Maintenance process involves the individual continuing to follow his relapse prevention strategies and strengthen his internal motivation to remain changed (Tierney & McCabe, 2005).

In light of newer data, the original TTM was re-conceptualized in such a way that these "stages" of change are no longer linear and distinct but are cyclical or parallel processes that organize around a unified change process (Prochaska, DiClemente, & Norcross, 1992). Therefore, they are conceptualized as co-occurring *processes* rather

than distinct *stages* (Prochaska et al., 1992). That is, a sex offender would not "finish" the Pre-Contemplation stage and then begin the Contemplation stage, for example. Rather, he is more or less committed to change at any given time in his life, depending on the circumstances (e.g., currently in treatment; Prochaska et al., 1992). However, further research needs to be conducted to determine if these processes can be understood as reflecting a single latent motivation construct in sex offender populations. Also, necessary is research examining the factors which may affect the change process such as, for example, affective presentation and psychopathology. Or, perhaps motivation exists outside of these factors and is not affected by these other processes within the offender. Because motivation to change is currently understudied, using an exploratory approach with broad concepts and questions may be useful in honing in on which factors, if any, motivation comprises.

The present study thus empirically tested whether motivation to change is a latent construct and whether it is associated with sex offenders' treatment response. Because motivation to change has not been validated in sex offender populations, this step is necessary to move the field closer to understanding motivation to change and thus eliminate the need to borrow from the substance abuse literature in conceptualizing motivation. Notably, the current measure used to assess motivation to change (i.e., URICA) has several limitations in its research and clinical application (which is further discussed in the Results and Discussion sections). However, until more information and empirical research draws conclusions about motivation to change, thus leading to the development of an improved measure, then the use of this measure is viewed as a necessary first step.

Although additional exploration of the factor structure of Stages as reflecting unitary or parallel processes needs to occur, some evidence from the substance abuse literature suggests that the Stages of Change are valid predictors of behavior change at least in some clinical groups. The research supporting this claim shows correlations between the stage of motivation and the mechanisms involved in changing the behavior, prior attempts to change, confidence in one's ability to change, and relapse potential (Blanchard et al., 2003). These findings suggest that exploring the relationship between motivation to change and treatment behaviors may be an important next step in sex offender research. Further, if measures of motivation to change reflect one unified latent construct or motivational profile (rather than four separate processes or stages), then it has some validity in that it predicts several features of treatment response.

While the suggestions of Tierney and McCabe (2005) appear relevant to sex offenders, there are two key gaps in the application of this concept of motivation to sex offenders. First, as already implied, the construct of motivation to change has not been validated in sex offender populations and may be better understood as a single latent variable. A factor analysis using a sample of substance users showed that Pre-Contemplation loaded on one factor alone while the other three processes (i.e., Contemplation, Action, Maintenance) loaded together on another factor (Blanchard et al., 2003). These factors were validated on treatment behaviors, indicating that those with high Pre-Contemplation scores had higher treatment attrition rates (Blanchard et al., 2003). These results provide preliminary support to the hypothesis that the "stages" of change may actually be processes that function as two constructs (i.e., Pre-Contemplation

then Contemplation, Action and Maintenance) instead of four separate constructs. This needs to be evaluated in sex offenders.

Second and more crucially, the model assumed that all sex offenders may experience the change process in the same manner. For example, no distinctions have been made about the application of the TTM to different types of sex offenders (e.g., those with and without severe psychological disturbances). Indeed, even if the processes necessary to affect change are the same in all types of sex offenders (which is doubtful given the variation that has already been noted in sex offenders' responses to treatment and other areas), the difficulties which may arise during this process may vary significantly based on offenders' internal psychological characteristics. Therefore, in the present study, one may hypothesize that at the beginning of treatment those offenders who have certain psychopathology compositions will have different levels of motivation. For example, if their psychopathology includes psychosis, then motivation may be low because of the lack of insight into behaviors that is often associated with thought disorders (APA, 2000) which may cause the offender to think that he has no maladaptive behaviors to change. Or, if their psychopathology includes prominent depression symptoms, then motivation may be low because of the pessimistic attitudes associated with depression (APA, 2000) which may lead the offender to think that he cannot change his behavior.

Theories of Sex Offending

Because little empirical evidence exists about the factors affecting motivation to change in sex offenders (Tierney & McCabe, 2002), it is helpful to consider the literature on theories of sex offending for clues about what characteristics may be important in

influencing motivation to change. When trying to understand the important sources of variation among sex offenders which may influence treatment response and recidivism, of course it is not enough to only examine motivation to change (Looman et al., 2005). Instead, knowledge of the offender's psychological profile needs to be gathered as well (Looman et al., 2005). For the purposes of this study, of particular relevance are theories which address the function of psychopathology in sexual offending.

Excluded theories. The following discussion of theories of sex offending is therefore selective. Many theories of sex offending are not germane to the concern about motivation to change because they either do not address the psychological factors which may be important to the change process, address only one aspect of psychopathology (e.g., affective disorders), or mention psychopathology only in passing. These include: Murphy, Coleman, Haynes, and Stalgartis' (1979) Integrative Theory of Rape; Finkelhor's (1984) Four-Factory Theory of Child Sexual Abuse; Marshall and Barbaree's (1990) Integrated Theory of Sexual Deviancy; Hall and Hirschman's (1992) Quadripartite Theory of Child Molestation; Prentky and Burgess' (1993) Biological Theory of Repetitive Sexual Aggression; Schwartz and Masters' (1993) Psychodynamic/Trauma-Based Theory of Sexual Addiction; Lalumiere, Chalmers, Quinsey, and Seto's (1996) Mate Deprivation Hypothesis of Sexual Coercion; Ward and Hudson's (1998) Meta-theoretical Framework of Sexual Offending; and Ward and Beech's (2006) Integrated Theory of Sexual Offending, among others. While each of these excluded theories could provide valuable information about the process of sexual offending, such as the role of attachment (e.g., Schwartz & Masters, 1993), biological factors (e.g., Prentky & Burgess, 1993), and evolutionary considerations (e.g., Lalumiere

et al., 1996), a full discussion of all of these theories is far beyond the scope of this paper. Instead, two theories which appear most relevant to the present study are discussed.

Included theories. Two theories were chosen as they relate to understanding the mechanism associated variation in sex offenders and whether psychopathology may be one possible source of that variation. The first theory, the quadripartite model, considers how psychopathology (among other factors) may function in a sequential progression to produce sexually offensive behaviors (Hall & Hirschman, 1991). The second, more recently developed theory, the pathways model, considers the ways in which dysfunction in four psychological factors (i.e., intimacy deficits, sexual arousal, emotional regulation, and cognitive distortions) interact to produce five sexual offense pathways (Ward & Siegert, 2002). Each theory is now considered further.

Hall & Hirschman's (1991) Quadripartite Model. A well-cited theory of sexual aggression (against women) proposed that sexual violence has its origins in four etiological factors within the individual: physical arousal, cognitive distortions, affective dyscontrol, and dysfunctional personality which interact in one model (Hall & Hirschman, 1991). Physical sexual arousal is theorized to begin the process of sex offending in this model. Sexual arousal of course could be harmless or harmful depending on the context of the situation. However, for those with a propensity toward maladaptive sexual behaviors, once sexual arousal is activated, they may have difficulty inhibiting that response or developing a more socially-appropriate and less harmful way of handling that response (Barbaree & Marshall, 1991).[8] This physical sexual arousal, in

[8] It should be noted that those offenders with a propensity toward maladaptive sexual behaviors have a history of being sexually abuse and/or connecting their sexual desires to aggressive behaviors (e.g., rape fantasies; Hall & Hirschman, 1991). Thus, this theory is not proposing that all men have the potential to rape or have difficulty controlling their sexual desires.

some individuals, is proposed to interact with cognitive distortions about women (e.g., rape-supportive beliefs such as "women are sexual objects") which may justify the offense behavior (Hall & Hirschman, 1991). These could also be distortions about the probability of being arrested (i.e., "I will not be caught."). As the cognitive distortions become active, affective control, which involves the ability to regulate internal emotions, particularly negative emotions, decreases. When negative emotions such as frustration or anger from being sexually rejected by a woman (for example) become potent enough to suppress appropriate emotional reactions to physically harming someone (e.g., guilt, shame), sexual violence is more likely to occur (Hall & Hirschman, 1991). Importantly, psychopathology is conceptualized as interacting with each of the three previously mentioned components. Hall and Hirschman (1991) hypothesized that early developmental experiences with parents may have contributed to the development of antisocial personality characteristics in sex offenders. These characteristics vary by offender depending on the type of childhood experiences. More so than the other factors, psychopathology is hypothesized to be centrally causal in the operation of sexual offending (Hall & Hirschman, 1991). This theory suggests that psychopathology may be one source of variation in sex offenders' behaviors.

One advantage of this model is that it highlights the manner in which different aspects of psychopathology (e.g., emotions, cognitions) may work together in the offense process. Having a theory which not only deconstructs the factors involved in the offense process but also attempts to present them in a sequential manner allows researchers and clinicians to hypothesize about where in the offense process motivation to change may be most negatively affected. For example, one may hypothesize that the initial cognitive

distortions have a more negative influence on motivation to change than affective control because they allow the offender to justify his actions against the victim (e.g., "She was playing hard to get"). Though this hypothesis was not tested in the current study, a researcher could develop a study to test the relationship between cognitive distortions and motivation to change while a clinician could target cognitive distortions during treatment in an effort to increase motivation to change.

One critique of this model is it focuses on state-like or temporary factors such as physiological and emotional arousal and does not consider enough of the trait-like or predisposing stable factors (e.g., personality traits) which may be influencing the offensive behavior (Ward & Hudson, 1998). Hall and Hirschman (1991) do consider personality factors and psychopathology but they do not fully explain the manner in which these factors may be influencing offensive behavior (Ward & Hudson, 1998). However, the components of offending included in this model can be used to justify exploring a connection between psychopathology and motivation to change, as mentioned.

Ward & Siegert's (2002) Pathways Model. A subsequent theory was developed through combining several well-cited theories of sex offending of the early 1990s. Ward and Siegert (2002) sought to create a comprehensive model of sex offending against children through combining the strengths of each several theories and, in doing so, hoped to compensate for each theory's individual weaknesses. The resulting theory presented five pathways in which four psychological mechanisms were featured: intimacy deficits, sexual arousal, emotional regulation, and cognitive distortions. Unlike the Hudson et al. (1999) study discussed previously, Ward and Siegert (2002) are proposing pathways (as

opposed to typologies) and assume that any offender could use any of these pathways in the commission of a sexual offense. These authors further assume that once an offender has used a particular pathway, he is not guaranteed to only use that pathway in the commission of another offense. The authors propose that all four of these factors are working together in the offense process but the prominence of one factor over the others determines the offender's reason for offending. In the first four sexual offense pathways, one of each of these factors is prominent over the others and is theorized to influence the resulting sexual offense. The fifth pathway involves having balance (i.e., equal deficiencies) among the four mechanisms (Ward & Siegert, 2002). The authors do not operationalize when one of these mechanisms is problematic and when it is not nor do they offer ideas of how these mechanisms would be measured. Thus, it is unclear if having "normal" levels of these mechanisms means having levels which are comparable to the general population or to nonsexual offenders.

The first pathway is characterized by intimacy deficits primarily (Ward & Siegert, 2002). These intimacy deficits could be due to an insecure attachment and social ineptness. Thus it was proposed that sexual offending against children may take place because these offenders do not know how to socially engage with adults and form appropriate sexual relationships with adults. The authors proposed that offenders who use this pathway may offend when they feel the need for intimacy (emotional or physically) but their lack of social skills interferes with their ability to form a healthy adult relationship where those needs can be met (Ward & Siegert, 2002).

The second pathway involves having inappropriate sexual arousal or having sexual arousal in situations that the general population would not usually experience

arousal. The authors proposed that early childhood sexual abuse caused difficulty in sex offenders being able to distinguish when it is appropriate to be sexually aroused. The offenders who use this pathway may seek out sexual partners when they (i.e., the sex offenders) are in a negative emotional state (e.g., anger), may chose inappropriate sexual partners (e.g., children), or may engage in risky sexual behaviors without the consent of their partner (Ward & Siegert, 2002).

The third sexual offense pathway which Ward and Siegert (2002) proposed involved problems with emotional regulation. These offenders may have problems identifying emotions, self-regulating their emotions or using social supports to help process difficult emotions, and difficult controlling emotional outbursts such as anger. For offenders who use this pathway, sexual offending is caused by deficits in emotional and behavioral control or using sex as a coping mechanism.

The fourth pathway involves having cognitive distortions which may lead to sexual assault (Ward & Siegert, 2002). These offenders may not have inappropriate sexual fantasies but may have antisocial attitudes which justify criminal behaviors. They may also endorse rape-supportive beliefs (e.g., children are sex objects) which specifically justify sexual aggression. The final pathway was described as a "multiple dysfunctions" pathway because it involved the sex offender having deficits in each of the four previously mentioned psychological characteristics. The authors proposed that these offenders were the most severely disturbed and had a variety of problems with insight and judgment as a result of the multiple deficits (Ward & Siegert, 2002). As a result, their pathway or motives for offending may be less predictable or easily categorized.

Similar to the Hall and Hirschman (1991) theory, the relevance of this theory to the present study is that it considers that manner in which different psychological factors may be working within the offender and leading to variations in behaviors—helping characterize variation. One limitation of the Ward and Siegert (2002) theory is that it was developed only for application to sex offenders against children. One possible explanation is that they did not think that it would be possible to create an overarching theory for sex offenders against adults (Brown, 2005). However, it would be preferable to consider the full range of offender variation.

Summary. Several other theories of sex offending could have been discussed (see above cited theories). The two theories which were emphasized addressed variation in sex offenders' psychological factors or psychopathology. These theories provided some support to the assumption of the present study that clusters of sex offenders may be formed as a result of variation in psychopathology. The first theory highlighted the role of psychopathology to the sex offending process (Hall and Hirschman, 1991), while the second theory describes differential pathways for sex offending based on psychological factors (Ward & Siegert, 2002). Though no one theory was available which could fully link psychopathology to motivation to change, the importance of these theories as they relate to the present study rests in their explanation of the variation in sex offenders and the implications that psychopathology may be one source of that variation. Further, though these theories do not represent a majority position in the sex offending literature, together they suggest that sex offenders may form subtypes based on psychological characteristics and those types may have differential meaning for motivation to change.

Treatment Implications of Studying Motivation to Change

The treatment implications for the present study were part of what motivated the study. The study was intended to evaluate whether using motivation to change as a central feature in the rehabilitation process of sex offenders might be beneficial. For example, one of several methods which could be used for this purpose is motivational interviewing, which is a client-centered approach to therapy with the goal of enhancing intrinsic motivation to change in clients who are not successfully engaging in traditional treatment approaches (Arkowitz & Miller, 2008). These clients may appear to be resistant to treatment but, while some of them are resistant, others of them are assumed to be ambivalent about changing and in need of encouragement to continue in the change process (Arkowitz & Miller, 2008). The premise of the present study was that correctly identifying the psychopathological status of the sample of sex offenders would be valuable in understanding their motivation and predicting their response to treatment. One advantage of using motivational interviewing as opposed to other motivation-enhancing techniques is that it can be incorporated into any number of established treatment programs, included CBT (Farbring & Johnson, 2008). However, because of the heterogeneity that manifests in sex offender populations (Schlank, 1995), motivational interviewing (or at least the same type of motivation-enhancing techniques) may not work as well with all sex offenders. The present study sought to determine whether different clusters of offenders may have distinct motivational stances based on their psychopathology. (Detailed descriptions of motivational interviewing can be found in Appendix H).

Conclusion

The preceding review highlighted the importance of variation in sex offenders' criminal and clinical presentations, which may be related to their variation in treatment responses. One potential source of variation in treatment responses is motivation to change. Motivation is an under-explored aspect of sex offender populations which may have important implications for treatment. Another potential source of variation in treatment responses is the variation in psychological characteristics or psychopathology that appears evident in sex offender samples. Despite the number of theories which are available to explain sexual offending, few of them sufficiently explicitly address the influence of psychopathology on the offense process and still fewer explicitly address motivation to change. Because of this, both of these factors need to be evaluated in more depth to better understand their functioning and potential treatment implications. A typology approach which can appreciate the heterogeneity of this population may be appropriate for such a task.

PSYCHOPATHLOGY AND SEX OFFENDER HETEROGENEITY

As already noted, psychopathology may be an important part of the variation which seems to reappear in sex offenders and some of the sex offender research provides evidence to this effect. Several prior attempts to explore psychopathology heterogeneity set the stage for the present study and are now discussed. Hall and Hirschman (1991) attempted to integrate it into their offense process model and other studies have used it to examine subtypes of offenders with implications for treatment (discussed below). Sex offenders tend to have heterogeneous psychopathological profiles (Schlank, 1995). Therefore studying them in subtypes based on their psychopathology may be an appropriate method to use in order to understand how sex offender pathology and motivation to change may function.

Overall Prevalence Rates of Psychopathology in Sex Offenders

Sex offenders in general often experience some types of psychopathology even more frequently than other types of offenders. Compared to nonsexual offenders, sex offenders have higher prevalence rates on the DSM-IV personality disorders Schizoid, Schizotypal, Narcissistic, Obsessive-Compulsive, Dependent, and Avoidant (Ahlmeyer, Kleinsasser, Stoner, & Retzlaff, 2003). These rates vary from 7% (Schizotypal Personality Disorder; 3% in nonsexual offenders) to 37% (Avoidant Personality Disorder; 25% in nonsexual offenders). For Antisocial Personality Disorder, which is commonly associated with criminal behavior (APA, 2000), sex offenders have rates of 24% while nonsexual offenders have rates of 29% (Ahlmeyer et al., 2003). This result is not surprising considering that the Ahlmeyer et al. (2003) sample of nonsexual offenders

included violent offenders which the authors report sometimes have higher rates of ASPD than nonviolent offenders.

Further, in incarcerated sex offenders, researchers have found rates of 35%, 22%, and 15% for current clinical levels of depression, anxiety, and co-morbid depression and anxiety, respectively (Stinson et al., 2005). These rates, though not necessarily higher than in other offenders, are higher than expected in the general, non-clinical population, in which one would find 12-month rates of 6.7% prevalence for adults (males and females) with depression and 18.1% prevalence for adults with anxiety (Kessler et al., 2005). In terms of more severe psychopathology, sex offenders have rates of 4% for thought disorders (compared to 1% in nonsexual offenders); for delusional disorder, sexual and nonsexual offenders had equal rates (2%; Ahlmeyer et al., 2003). Given the rates of these emotional and personality disorders in this population, it would appear that behavioral differences, including those related to motivation to change and treatment response, may be related to the type and level of psychopathology evident in the offender.

Prior Attempts to Cluster Sex Offenders Based on Their Psychopathology

Psychopathology may be a key factor in characterizing and understanding the observed differences in sex offenders' offense patterns and responses to treatment (Drapeau et al., 2003). Because of the different emotional and behavioral patterns associated with each type of psychopathology (e.g., Lee et al., 2001), one might hypothesize that sex offenders may cluster into meaningful subtypes based on their psychopathology profiles. Indeed, in the early 1990s, five studies were published which used cluster analysis with sex offenders to pursue this possibility (Duthie & McIvor, 1990; Kalichman et al., 1992; Kalichman, Shealy, & Craig, 1989; Shealy et al., 1990;

Schlank, 1995). Each of these studies sought to create homogenous clusters of sex offender subtypes based on their psychopathology characteristics (as measured by the MMPI). The findings from each of the four clustering studies which used the MMPI as their measure of psychopathology will be presented followed by a brief description of the Schlank (1995) study which did not use the MMPI as its clustering measure. Then the overall strengths and weaknesses of these studies will be presented in the *Interpretation of Results* section below.

Kalichman et al. (1989). Kalichman and colleagues (1989) analyzed the psychopathology profiles of 120 incarcerated sex offenders against adult women. Using the MMPI t-scores as their measure of psychopathology, the authors found a five-cluster solution best fit their data. They interpreted their clusters based on the number of t-score elevations above 70. The first cluster of individuals (33% of total sample) had all scales within normal clinical ranges (i.e., t-scores were below 70). They were likely to have known their victims and to have committed the sexual assault during the commission of another crime. They also had the lowest maladaptive sexual arousal scores (i.e., they were not sexually aroused by thoughts or images of sexual assault). The authors concluded that this cluster of offenders had sexual assault as a secondary motivation in their criminal activity.

Elevations in depression, antisocial behaviors, paranoia, and schizophrenic symptoms characterized the next cluster of offenders (10% of total sample; Kalichman et al., 1989). The authors found this cluster to be associated with cognitive distortions and propensities toward rape. The authors concluded that this cluster of offenders had rape as a primary motive and were likely to not know their victims. The third cluster (33% of

total sample) showed a single elevation on the antisocial behavior scale, with all other scales within normal limits. Like the first cluster, this group of offenders was likely to commit their sexual assault during the commission of another crime and show low levels of maladaptive sexual arousal.

Individuals in cluster four (18% of total sample) displayed elevations in antisocial behavior, schizophrenia symptoms, and hypomania symptoms (Kalichman et al., 1989). This cluster showed the widest range of maladaptive sexual interests and behaviors, including knowing their victim, thinking more frequently about rape, showing more maladaptive sexual interests, and having more disturbed thought processes. Similar patterns were found in cluster five, but were more severe. The fifth cluster (8% of total sample), which showed the most severe psychopathology, had exaggerated response styles, generalized anxiety, and schizophrenia symptoms. This cluster of offenders also had the highest levels of substance use, became sexually aroused to thoughts of rape, and reported several maladaptive sexual thoughts and behaviors.

Duthie and McIvor (1990). Duthie and McIvor (1990) evaluated the psychopathology clusters of 90 convicted, pre-sentence sex offenders against children. Instead of using the MMPI t-scores as in the other reviewed studies, they used the raw scores from each of the MMPI subscales in their cluster analyses and then described elevations of the clusters in terms of t-scores greater than 70. In their preliminary analyses, hypomania symptoms did not contribute to the analyses and, thus, were removed from the subsequent clustering. In the end, they found an eight-cluster solution to best fit the data (Duthie & McIvor, 1990).

The first cluster (9% of total sample) was characterized by depression, antisocial characteristics, and generalized anxiety (Duthie & McIvor, 1990). Heightened depression and antisocial characteristics, together, is a common pairing in sex offenders (Anderson & Kunce, 1979; Erickson, Luxenberg, Walbeck, & Seely, 1987), though it was present in only 9% of the Duthie and McIvor (1990) sample. In previous research, this pairing has been associated with intoxication during the offense and physical penetration of the victim (Anderson & Kunce, 1979). In the Duthie and McIvor (1990) study, offenders in this cluster were more likely to have female child victims (as opposed to males or both sexes as child victims) and 25% of these offenders had a prior criminal history of sexually offending against children.

The second cluster (23% of total sample) was the most frequently occurring type of cluster and was characterized by antisocial characteristics and low levels of masculine characteristics (Duthie & McIvor, 1990). This pairing is also common in sex offender populations (Duthie & McIvor, 1990; Erickson et al., 1987). In Duthie and McIvor (1990), offenders in this cluster offended primarily against female children (52%) and fewer had prior sexual offense convictions (14%). Cluster three (9% of the total sample) was characterized by hypochondriasis symptoms, antisocial characteristics, hysteria symptoms, generalized anxiety, and schizophrenia symptoms (Duthie & McIvor, 1990). This profile is unique to this study. It was associated with having female victims (78% of this cluster), being intoxicated at the time of the offense (40%), and a low rate of prior convictions for sexual offense (10%).

Cluster four (7% of total sample) was characterized by antisocial characteristics, paranoia, and schizophrenia symptoms (Duthie & McIvor, 1990). Offenders in this

cluster were also characterized by an exaggerated response style. The elevations of these characteristics together are frequent in sex offenders (Anderson & Kunce, 1979; Erickson et al., 1987) and, in previous research, were associated with intoxication during the time of offense, prior convictions, and juvenile delinquency (Anderson & Kunce, 1979). In the Duthie and McIvor (1990) study, 33% of this cluster had prior convictions or arrests for sexually offending against children and 50% offended exclusively against female children. The other 50% offended against both male and female children; none of them were intoxicated during the offense.

In the fifth cluster (18% of total sample), only antisocial characteristics were elevated; all other psychopathology was sub-clinical (Duthie & McIvor, 1990), similar to cluster three of the Kalichman et al. (1989) study. Thirty-one percent of these offenders have prior convictions (Duthie & McIvor, 1990). No other characteristics distinguished this cluster of offenders from others. Eight percent of the total sample was included in the sixth cluster which was characterized by sub-clinical levels of hysteria and antisocial characteristics (Duthie & McIvor, 1990). This cluster was also characterized by a repressive response style and under-reporting psychopathology. Fourteen percent of the offenders in this cluster had prior convictions for sexual and/or nonsexual crimes.

The last two clusters were both characterized, in part, by schizophrenia symptoms (Duthie & McIvor, 1990). In addition to these symptoms, cluster seven (9% of total sample) was also characterized by low masculine characteristics and heightened symptoms of social introversion. Interestingly, this was the only cluster in this study which did not include elevated antisocial characteristics. Ten percent of the offenders in this cluster had prior convictions; 90% offended primarily against female children. In

addition to the schizophrenia symptoms, cluster eight (13% of total sample) was characterized by depression, antisocial characteristics, generalized anxiety, and an exaggerated response style (Duthie & McIvor, 1990). Eighty-three percent of these offenders had prior convictions, 58% were intoxicated at the time of the offense, and 73% offended primarily against female children (Duthie & McIvor, 1990).

Shealy et al. (1990). Shealy et al. (1990) examined 90 incarcerated sex offenders against children using the MMPI. Though Shealy and colleagues used t-scores instead of raw scores like the Duthie and McIvor (1990) study, they did not require their t-score elevations to surpass 70 in order to be interpretable in this study. Therefore, elevations were interpreted in relation to each other in one profile rather than in comparison to the overall clinical cut-off of the measure. This point is important to note in terms of how these clusters are compared to the cluster profiles of other studies.

Of the four resulting clusters, the first group (50% of total sample) was characterized by antisocial characteristics and hypomania symptoms, though these elevations were sub-clinical (Shealy et al., 1990). This cluster was associated with high self-esteem, antisocial behavior, and impulsivity but not maladaptive sexual behavior. The second cluster (19% of total sample) was characterized by clinical levels of paranoia; four other scales (i.e., hypochondrias, depression, hysteria, and antisocial behaviors) were sub-clinical but had nearly equal t-scores. Individuals in this cluster had low sexual and psychological disturbances but were resentful, suspicious, and guarded (Shealy et al., 1990).

The third cluster (18% of total sample) showed elevations on antisocial characteristics, paranoia, and schizophrenic symptoms, all of which were associated with

hostility and poor judgment (Shealy et al., 1990). This cluster was also associated with increased anxiety, anger, obsessions with sex, and disturbing sexual thoughts. The final cluster (13% of total sample) had the greatest levels of psychopathology in exaggerated response styles, paranoia, generalized anxiety, and schizophrenic symptoms (Shealy et al., 1990). This cluster had higher levels of anxiety and anger, was most likely to need mental health services, and was associated with sexually disturbing behaviors.

Kalichman et al. (1992). In this study, MMPI psychopathology t-scores of 110 outpatient sex offenders against children were examined; a five-cluster solution fit the data the best (Kalichman et al., 1992). They again based their interpretations of the clusters on the number of t-score elevations above 70. Two of the clusters had all scales within normal clinical ranges (i.e., t-scores were below 70). One of these clusters was associated with primarily offending against female children (14% of total sample). The other was associated with a tendency to deny or minimize symptoms (35% of total sample). The third cluster (26% of total sample) in this study had elevations in antisocial behavior and low masculine characteristics, which was associated with normal psychosexual functioning and offending against male children. The traits of this cluster parallel those found in the first cluster of Kalichman et al. (1989).

The last two clusters were associated with severe psychological disturbances, with clinical elevations on nearly all scales (Kalichman et al., 1992). One of these clusters (19% of total sample), which was characterized by exaggerated response styles, depression, antisocial characteristics, low masculine characteristics, paranoia, generalized anxiety, schizophrenic symptoms, and social introversion, was associated with severe psychological distress, cognitive disturbances, and low sexual functioning. The last

cluster, which was characterized by antisocial behavior, low masculine characteristics, paranoia, schizophrenic symptoms, and hypomania symptoms, was suggestive of frequent aggression and impulsivity (10% of total sample). They also had extreme levels of unusual sexual interests (e.g., fetishes, sadomasochism) and the highest levels of sexual aggression of all five clusters. The authors likened this profile to cluster five of the Kalichman et al. (1989) study.

Schlank (1995). This study is different from the rest of these studies because it did not use the MMPI to cluster; it used the Multiphasic Sex Inventory (MSI; Nichols & Molinder, 1984). The MSI is a measure of sex offender psychopathology (e.g., cognitive distortions, rumination of sex offending) and has been used to validate the clusters in three of the four previously described clustering studies (i.e., Kalichman et al., 1989, 1992; Shealy et al., 1990). Because the proposed study has chosen to study psychopathology more broadly in sex offenders (as measured by the MMPI) rather than focusing on sexual psychopathology specifically, the details of the sexual psychopathology clusters do not seem particularly relevant to this discussion.[9] However, Schlank (1995) has relevance in this discussion because it using a mixed sample of sex offenders (i.e., sex offenders against adults and sex offenders against children) as opposed to a sample of only one type of offender as with the other cited studies. This study provides an alternate way of thinking about sampling procedures when clustering sex offenders.

Schlank (1995) clustered a mixed sample of 164 incarcerated sex offenders based on their psychopathology on the MSI. The sample included 80 sex offenders against

[9] The reasons for using psychopathology more broadly-defined (rather than sexual psychopathology specifically) is provided in the Methods section below.

adults, 81 sex offenders against children, and 3 sex offenders with both genders as victims. Seven different psychopathology clusters emerged from the sample (Schlank, 1995). Of these seven clusters of offenders, four were distinguished from the other clusters by their victims (i.e., offenders against adult females; incest offenders against female children; non-incest offenders against female children; mixed set of offenders against multiple types of victims). Because three of the seven clusters were not defined by victims, the author concluded that there was a type of sex offender taxonomy which existed independently of victim status (Schlank, 1995). Thus, studies which examine only one type of offender may be overlooking these important subtypes.

Interpretation of results of prior cluster analytic studies. The following chart summarizes the results of the reviewed studies:

Study	N	Sex Offender	Clusters	MMPI Scales
Kalichman et al. (1989)	120	Incarcerated, Adult victims	5	C1: normal limits C2: D, Pd, Pa, Sc C3: Pd C4: Pd, Sc, Ma C5: F, Pt, Sc
Duthie & McIvor (1990)	90	Outpatient, Child victims	8	C1: D, Pd, Pt C2: Pd, Mf C3: Hy, Pd, Hs, Pt, Sc C4: Pd, Pa, Sc C5: Pd C6: Hy, Pd, K, L C7: Sc, Mf, Si C8: Sc, D, Pd, Pt, F
Shealy et al. (1991)	90	Incarcerated, Child victims	4	C1: Pd, Ma C2: Pa, Hy, D, Hs, Pd C3: Pd, Pa, Sc C4: F, Pa, Pt, Sc
Kalichman et al. (1992)	110	Outpatient, Child victims	5	C1: normal limits C2: normal limits C3: Pd, Mf C4: F, D, Pd, Mf, Pa, Pt, Sc, Si C5: Pd, Mf, Pa, Sc, Ma
Schlank (1995)	164	Incarcerated, Mixed victims	7	n/a

Overall, it seems that the findings from these studies produce somewhat consistent results in supporting the utility of the MMPI in clustering techniques with sex offenders. One study yielded a four-cluster solution (Shealy et al., 1990), two studies yielded a five-cluster solution (i.e., Kalichman et al., 1989, 1992), and one yielded an eight-cluster solution (Duthie & McIvor, 1990). While none of the clusters in any of these studies had the exact elevations on the exact same traits, conceptually, these studies had somewhat similar findings regarding the types of psychopathology clusters which were evident in their samples. The conceptual parallels between these studies are particularly interesting considering that one used a sample of sex offenders against adults (Kalichman et al., 1989) and the others used samples of sex offenders against children (Duthie & McIvor, 1990; Kalichman et al., 1992; Shealy et al., 1990). Perhaps these similar clusters are reflective of a higher-order conceptual similarity among sex offenders which varies by individual psychopathology traits of the offender. Also, the overlap in results across these studies, as well as the results from the Schlank (1995) study, suggests that sex offenders against adults and sex offenders against children may be more similar than different in their psychopathology profiles.

Concerning the nature of the clusters, some of the MMPI elevations were consistent for all of the studies reviewed: paranoia, depression, antisocial behaviors, schizophrenic symptoms, and generalized anxiety. The consistency in elevation of the schizophrenia scale across these studies (regardless of the victim status as adult or child) was unexpected given that it is most commonly elevated scale (along with the antisocial deviance scale) in sex offenders against adults but not sex offenders against children (Butcher & Williams, 2000; Megargee, 2006). Also, of the four MMPI clustering studies

reviewed, hypomania symptoms were elevated in two (i.e., Kalichman et al., 1989, 1992). The consistent presence of each of these scales across these four studies suggests that they may be prominent features of sex offenders' psychopathologies.

The consistent findings regarding the presence of MMPI scales of paranoia, depression, antisocial characteristics, and impulsivity symptoms align with those in a more recent study (non-cluster analysis) which found that these four factors were the most commonly elevated factors in criminal populations (Megargee et al., 1999). These results also parallel those of previous research assessing the MMPI two-point code elevations of sex offenders (Anderson & Kunce, 1979; Erickson et al., 1987). In a non-cluster analytic study of 403 convicted, incarcerated sex offenders (mixed sample of sex offenders against children and sex offenders against adults), antisocial characteristics were elevated in seven of the eight code type pairings (Erickson et al., 1987). Antisocial characteristics were paired with depression, paranoia, and hypomania, consistent with Megargee et al. (1999), as well as with masculine/feminine characteristics, generalized anxiety, and schizophrenia symptoms, which parallel the findings of the four MMPI clustering studies.

In addition to the consistency among the traits of interest in these studies, this review also suggests that psychopathology is consistently related to certain offense characteristics. The relationship to the victim (Kalichman et al., 1989), criminal history (Duthie & McIvor, 1990), physical penetration of the victim (Anderson & Kunce, 1979), gender of the victim (Duthie & McIvor, 1990), and intoxication during the offense (Anderson & Kunce, 1979) all appear to be important offense characteristics which may

distinguish psychopathology clusters from one another and create a richer description of the offenders in each cluster.

Based on this information, the four MMPI clustering studies reviewed here suggest the importance of seven psychopathology characteristics (i.e., depression, antisocial characteristics, masculine/feminine characteristics, paranoia symptoms, generalized anxiety, schizophrenia symptoms, and hypomania symptoms) in sex offender samples and expand on the understanding of these characteristics through clustering offenders into meaningful subtypes.

However, these clustering studies have several limitations. One concerns their sample composition. Each of these studies used one type of sex offender in their samples—either sex offenders against adults (Kalichman et al., 1989) or sex offenders against children (Duthie & McIvor, 1990; Kalichman et al., 1992; Shealy et al., 1990)—making their samples only selectively represented.[10] The authors justify the use of only select portions of the sex offender population on the grounds of needing to explore the heterogeneity within each sex offender group. Indeed, the results from each study indicate significant variation in psychopathology even within one type of offender. However, the review of these studies suggests that the overlap in psychopathology between these two types of offenders may be more prominent than the differences between them. Thus, at best, the reviewed clustering studies provided information on some of the unique psychopathology features of each sex offender type and then replicated each other in terms of general features of psychopathology within the sex offender population. Knowing the unique psychopathology features of subtypes of

[10] Additional information on how psychopathology (i.e., individual disorders such as depression or Antisocial Personality Disorder) differs by victim status in sex offenders can be found in Appendix C.

offenders may be useful for some research questions, but in exploratory studies examining general patterns of psychopathology, combining the offender types has the advantage of exploring the overlap in psychopathology among sex offenders generally and devising implications for a wider range of offenders.

Another weakness of these studies is that they do not provide implications for the clinical meaning or application of the results. Each of the clusters which emerged in these studies was compared based on the offense characteristics and specific types of sexual psychopathology (e.g., rumination on sex). However, only one of these studies examined the clinical relevance of the emerging clusters. Kalichman and colleagues (1989) conducted a follow-up study to examine differences in treatment attendance among the five clusters (Kalichman, Shealy, & Craig, 1990). In this study, they used a sub-sample of the original 120 sex offenders against adults from the 1989 study for a total of 55 offenders who participated in a treatment program while incarcerated (Kalichman et al., 1990). Results indicated that those offenders in clusters four and five (i.e., those with more severe psychopathology) were more likely to attend treatment while those in cluster one (i.e., those with the least severe psychopathology) had the lowest rates of attendance (Kalichman et al., 1990). The authors interpreted these findings as indicating that those who were more severely disturbed were more motivated to attend treatment because they were under more distress and needed relief. Thus psychopathology clusters are related to treatment behaviors and, thus, may have clinical relevance for sex offenders. However, no study assessed motivation to change or treatment completion, which may also differ by psychopathology clusters and provide even more clinical information about the function of psychopathology in this population.

A final critique of these studies concerns their sample sizes. The studies started with small samples and, when they finished their clustering, the result was a small number of offenders in each cluster. For example, Duthie and McIvor (1990) in particular had cluster sizes of six or eight offenders because they had a total sample size of 90 and found eight clusters. These small numbers in the clusters may be one reason why Duthie and McIvor (1990) found cluster types that did not overlap with the other studies. Having this small number of offenders per cluster may make it difficult to draw reasonable conclusions about the psychopathology subtypes in their samples. Having a larger sample size may increase the number of offenders per cluster and strengthen the internal validity of the study.

Summary. This discussion has highlighted previous attempts at clustering psychopathology in sex offender samples. While these studies have shown that clusters of psychopathology types can be formed and replicated to a certain extent in this population, problems with insufficient representation of sex offender types, clinical correlates, and sample size need to be improved upon to validate and fully evaluate the utility and reliability of a clustering approach. The present study sought to correct for these limitations in the exploration of heterogeneity in sex offenders and its implications for treatment approaches and outcomes.

Treatment Implications of Studying Psychopathology Types

Though speculative, it is valuable to consider possible clinical implications here. It has been postulated that variations in sex offenders' clinical presentations may differentially affect responses to the same treatment protocol (Ahlmeyer et al., 2003). Sex offenders who withdraw from treatment typically have more severe types of

psychopathology (e.g., personality disorders, psychosis) than sex offenders who complete treatment (Looman, Dickie, & Abracen, 2005). Other research has found that the clusters of sex offenders with the most severe psychopathology were more likely to attend treatment regularly than the offenders with less severe psychopathology (Kalichman et al., 1990). In either case, these findings contradict the assumption of Ward and Gannon (2006) that new treatment approaches applied to all sex offenders may be important to further reducing recidivism rates and instead suggest that different treatment approaches may be necessary for different types of psychopathology clusters. In addition, if it is the case that heterogeneous motivation and psychopathology both affect treatment responses, perhaps there is an unidentified relationship between these two factors—or perhaps looking at them together as opposed to separately would provide a more complete picture of the manner in which internal psychological factors interact to produce certain behaviors and outcomes in sex offenders.

Conclusion

This literature review has attempted to illustrate that motivation to change is an important feature of sex offenders which could have direct influences on treatment responses. However, because of the heterogeneity of sex offenders, different psychopathologies could lead to different genuine or disingenuous motives for changing behavior. Therefore, clustering this population into psychopathology subtypes and descriptively evaluating these clusters may provide key information about the types of sex offenders who may be motivated to change. Finally, comparing these clusters by motivation to change and other clinical variables may provide information about treatment response and new intervention strategies.

AIMS OF THE PRESENT STUDY

The present study examined how variation in sex offenders may be expressed through psychopathology, motivation to change, and treatment responses. To address this goal, the present study examined the archival data of non-incarcerated male sex offenders beginning an outpatient treatment program. This study utilized a cluster analytic approach to identify psychopathological types of offenders and then validated those clusters with both offense characteristics and clinical variables, including motivation to change. It was hypothesized that psychopathology clusters (which were intended to capture the heterogeneity within this sample of sex offenders) would be associated with different levels of motivation to change based on the previously reviewed theoretical and empirical research.

Expected Psychopathology Clusters

Based on the cluster analyses previously conducted with sex offenders, it was expected that four or five clusters will form in the present study since three of the four reviewed MMPI clustering studies yielded either a four- or five-cluster solution. The expected clusters include: *(1)* offenders who have psychopathology scores within normal clinical ranges. Their motivation to change scores will likely be representative of offenders who are beginning treatment (i.e., motivation will likely be low). *(2)* Those that have elevations on measures of self-denial and minimization as well as typical criminal offender psychopathology (e.g., antisocial characteristics, impulsivity). These individuals may have lower motivation to change because they deny the seriousness of their actions and, thus, better justify their offending behaviors (Kear-Cowell & Pollack, 1997). *(3)* Those who have a higher sensitivity to guilt and, therefore, may feel more

motivated after offending to change their behaviors (Hudson et al., 1999). Their psychopathologies may include elevations in anxiety and depression as these pathologies can be associated with insecurities, worry, and shame (APA, 2000). *(4)* Some sex offenders have genuine and extensive psychological disturbances such as schizophrenic symptoms (i.e., poor judgment, social isolation), disturbed thought patterns, paranoia, and impulsivity. These offenders may have low motivation to change because they are not attuned to the meaning of their behaviors. *(5)* If a fifth cluster emerges, it is expected to be of those who are highly psychologically disturbed who have elevations on multiple traits associated with antisocial behavior (e.g., exaggerated response styles, antisocial characteristics, overly masculine tendencies, impulsivity). These individuals may be the least motivated to change as they may be driven by external gains (Lee at al., 2001).

Descriptive Variables

Offense characteristics. The first offense characteristic which was used to describe these clusters was victim status. As the literature review indicated, sex offenders against adults and sex offenders against children may have different types of psychopathology characteristics, though these distinctions may not be as prominent as is sometimes stated in the literature. It is therefore hypothesized that the clusters of the present study may differ by victim status. The other offense characteristics which were used in this study were included based on the results of previous clustering studies and the information available in the criminal files of this study's participants. Those additional characteristics included the type of offense perpetrated, whether the offense involved physical penetration of the victim, the gender of the victim, the victim's age, the relationship of the victim to the offender, whether the offender was intoxicated at the

time of the offense, whether the offender had prior offenses, whether the offender is currently on probation or parole, and the number of months the offender spent in jail or prison for the sexual offense.

Clinical characteristics. Motivation to change was the primary theoretical comparison variable. Treatment attendance and completion also served as comparison variables. These are presumably related; Tierney and McCabe (2002) postulate that if sex offenders are motivated to change then it would be reflected in actions such as treatment attendance and completion. The speculation about the relationship between motivation to change and treatment behavior is supported by limited empirical research finding that lower levels of motivation to treatment were associated with higher attrition rates (Beyko & Wong, 2005). A number of clinician-rated psychological variables assessed before and after treatment were also included in the analyses. Those variables were risk of committing another sexual offense, psychopathology, maturity, denial, and impulsivity. It was expected that the clusters of individuals with higher levels of motivation to change would attend more treatment sessions and complete the treatment program requirements.

Hypotheses

The following hypotheses were developed:

1. *Hypothesis 1*: Sex offenders will form into at least homogenous clusters based on their psychopathology traits.
2. *Hypothesis 2*: The resulting psychopathology clusters of Hypothesis 1 will differ on offense characteristics such as victim status, suggesting validity in cluster structure.

3. *Hypothesis 3*: Motivation to change will form into one latent construct which will predict both treatment attendance and completion for sex offenders.
4. *Hypothesis 4*: Clusters will vary by their level of motivation to change and treatment variables (i.e., attendance, completion).

METHODS

Definitions

The archival data used in this study consisted of the clinical and criminal records of 228 non-incarcerated adult (18 or older) male sex offenders on probation or parole for having been convicted of a sexually violent act. As explained later, the final 228 files used in the analyses were the result after data cleaning and evaluation of data quality on an initial set of 274 files. Based on information obtained through the Michigan Penal Code (Michigan Legislature, 1931), for the purposes of this study, *sexually violent acts* included coerced or forced vaginal/anal sex, oral sex, and/or inappropriate fondling of the breasts, buttocks, or genitals. For this study only those convicted of these types of *contact offenses* were included in the analyses and, in accordance, the term *sexual offending* referred to coerced or forced sexually violent acts with an adult woman or child.[11] In this study, *sex offenders against adults* referred to men convicted of a sexually violent act against a victim aged 16 or older while *sex offenders against children* referred to men convicted of a sexually violent act against an individual under the age of 16.[12]

Archival Data

This study used archival data which had not been analyzed previously. Data for clients who entered a treatment program between 2000 and 2005 and who completed all of the necessary intake assessment measures were used. To explore the possibility of

[11] *Non-contact* sexually violent acts will be conceptualized as those in which the offender does not make direct physical contact with the victim and/or no one specific victim can be identified. Examples may include possession of child pornography, exhibitionism, or voyeurism. These types of offenses will not be considered in this study unless they are committed in conjunction with a contact sexual offense.

[12] The age of 16 was chosen to distinguish children from adults because the legal age at which an individual can consent to sexual activity in Michigan is 16 years of age (Eaton County Prosecuting Attorney, 2006).

using this data for the purposes of this study, a data sampling procedure was conducted and a random sample of client files were analyzed for content. This information was discussed in detail in the proposal and has now been moved to Appendix I. All information taken from the clients' records and included in the database for analysis in this study were de-identified and cannot be linked back to any particular offender.

The files for this study were taken from a mid-Michigan treatment rehabilitation program for offenders. This state-sponsored center regularly evaluated and treated adult individuals after they were convicted of a crime, released from prison, and placed on probation or parole. When the clients arrived at the treatment facility, the clinic's intake workers collected information about the sexual crime the client most recently committed and for which they were being treated. These crimes may or may not have been their first sexual offense. This program conducted court-mandated outpatient group therapy with offenders of differing crimes who were on either probation or parole and were required to participate in treatment as a condition of their sentence. Some of these offenders were recently released from jail/prison while others were not sentenced to jail/prison (i.e., went directly to probation). The clinic placed offenders into a group for treatment based on the crime that they most recently committed and were sentenced to treatment for committing. At this facility there were groups for sexual offenders, domestic assaulters, perpetrators of property crimes, and others; only the sex offender group records are used here. The facilitators for these groups varied in their credentials and training. Group facilitators were Master's level counselors, Ph.D. level clinical psychologists, and Master's and Ph.D. level social workers. All facilitators were unaffiliated with the present study.

Prior to treatment, the group facilitator interviewed clients and administered a pre-treatment assessment. The assessment battery differed for each facilitator and each group, but was the same for all the sex offenders. To the sex offenders, the facilitators administered two questionnaires assessing substance use, the Brief Symptom Inventory (Derogatis & Melisaratos, 1983), the University of Rhode Island Change Assessment Scale (McConnaughy et al, 1983), the Sex Offender Maturity Index (an unpublished manuscript developed by the director of the treatment facility), and the MMPI-2 (Butcher et al., 1989). These assessments usually lasted 2-4 hours because the group facilitator read each question on the questionnaire to the client. Once the assessment was complete, the client began to attend group sessions regularly, though he may have joined a group that had already met for several sessions. He was required to continue his treatment until he had attended the program's required number of sessions and completed all related program requirements. Poor attendance or cooperation in the groups could have resulted in a report being sent to the client's probation or parole officer and/or removal from the group. Thus, clients had obvious extrinsic motivation to attend the groups—but not to achieve particular goals from the treatment.

The exact treatment approach taken in each type of group therapy (i.e., therapy in the domestic violence group, assaultive offenders group) was dependent on the counselor and the nature of the group. For the sex offenders group (which did not separate sex offenders into different therapy groups based on the degree or nature of their sexual offense), the facilitator used a non-validated Maturity Model. There were eight domains of this model including Healthy Growth, Responsibly Sexuality, Productivity, Socialization, Nurturing, Wisdom, Critical Thinking, and Purposeful Living. In addition

to the material relevant to these domains, the facilitator also covered specific treatment material from the Michigan Department of Corrections, which was often cognitive-behavioral in nature (e.g., cognitive distortions, affective control). When clients completed the required 30-sessions (even if they were not completed consecutively), they wrote a brief summary (typically a paragraph) of the lessons and tools they learned during the program, which became a permanent part of their treatment record. They also took a final exam testing their knowledge of the information presented to them during the course of the treatment. They then became a "graduate" of the program and were required to return to the facility once per month for individual meetings with the group facilitator for the remainder of their probation or parole.

In order for his records to be included in the present study, an individual must have been a contact sex offender. That is, he must have been convicted of criminal sexual conduct (CSC) in the first, second, third, or fourth degree at least once and his crime must have included physical contact with the victim. (For additional information and details associated with each of these convictions, see The Michigan Penal Code, Act 328 of 1931). At least one of these sexual offenses must have occurred after the age of 18; those with only a juvenile record of sexual offense were excluded. It was expected that some clients would have convictions other than CSC on their criminal records; this was not an exclusion criterion. However, because each category of offender (e.g. sex offender, domestic assaulter) who entered the treatment program answered a different set of questionnaires, only the clinical files of those offenders who enrolled in sex offender group therapy and completed all of the associated measures were used in this study. Therefore, the clinical records used in this study were from persons who were most

recently convicted of a CSC offense and either had no criminal history (i.e., the present crime was their first conviction) or had a history of CSC and/or non-CSC (e.g. breaking and entering, domestic assault) crimes. Clinical records of persons who previously completed this particular treatment program or started the program but did not finish were included in the study as long as all of the necessary measures for the current study were completed at the same time period. Further, because the majority of sex offenders who participated in this treatment program were males, records of female offenders were excluded.

Data Collection and Preparation

The data used in this study were collected between 2000 and 2005 during the intake procedures described above. Because of the use of archival data and the lack of research consent, de-identified data were utilized per appropriate IRB requirements. The section that follows (Data Quality Assurance) describes the main process to getting the data and their source.

Data Quality Assurance

Anonymity. Data files were stored in locked filing cabinets in a locked office of a locked suite. In this lab, the files were de-identified by two undergraduate research assistants and assigned identification numbers specific to the present study for use by the PI.

Data entry training. To assure that the data were coded accurately, two training sessions were held. The first served to familiarize the assistants with the information they would need to enter into the database. During this session, the assistants were shown blank copies of the forms which they would use to gather the necessary data

information. The questions on the forms were explained in connection with the SPSS database where they would enter the participants' responses.

During first training session the assistants were also given the coding schemes for the two variables in the study which required subjective coding: Offense Type and Relationship to Victim. Though offense type (i.e., CSC 1, 2, 3, or 4) is an objective coding, it was not consistently provided as such in the offenders' records. Thus, at times the assistants would have to provide a code based on the legal definitions of CSC crimes and the description of the crime provided in the participants' files. Similarly, Relationship to Victim had a subjective coding scheme which required additional training. The assistants were required to read descriptions of the criminal offense and make a judgment of how (or if) the offender knew the victim. The rest of the variables were either taken from a questionnaire in the participants' files which was already numerically coded (i.e., education, pre- and post-treatment variables, URICA), dichotomized as yes/present or no/absent, or given a specific numerical scheme to use to code the variables (i.e., race, marital status). The assistants were given a detailed spreadsheet of the variables to be found, how they were to be numerically coded, examples of which types of responses would fall into each category, and how missing data should be recorded.

Rating Reliability. After the first training, the assistants began data entry with entering the data used for evaluating keystroke and rater entry reliability. Each assistant entered 20 randomly selected files into a separate database in order for reliability to be checked (see Table 1). To check their files, the assistants made copies of the files and used white out or black marker to de-identify the data. The primary investigator then checked the responses in the database to the responses in the files and noted the errors of

each assistant. After the 20 reliability files were entered and the reliability calculated (i.e., kappas and ICCs) using SPSS 14.0, a second training was held to clarify any problems in the coding schemes and correct the keystroke errors between the two assistants.

The variables with the lowest reliabilities (i.e., below .75) were Marital Status and Relationship to Victim. After analyzing the types of errors being made, it appeared that one coder would rely on the offenders' report of their marital status at intake while the other coder would rely on the clinician's psychological report for that information. For example, an offender may self-report that he is single at intake but the psychologist may report that the offender is divorced. These two sources of information resulted in two different codes and lower reliability (see Table 1). At the re-training, the assistants were instructed to use the psychologist's report for the demographic and criminal information.

As for the Relationship to Victim variable, originally it included nine categories to capture the possible relationship that the offender could have had with his victim (i.e., biological child, stepchild, significant other, friend, coworker, acquaintance, relative, stranger, and other). However, after running inter-rater reliability for this variable, it seemed that nine categories were too many and may have been the cause of the error in calculating the reliability the first time (see Table 1). Thus a new six-code scheme was developed in an attempt to increase the reliability. The changes in the scheme resulted in an inter-rater reliability (ICC) of 0.93.

For the remaining errors in the other variables, inspection and discussion revealed them to be keystroke errors that did not require further training or calibration. The assistants were told which variables had discrepancies between them and were instructed

to correct their own errors. Once this was complete, the reliability was run a second time on all of the errors. The final reliability (ICC) ranged from 0.93-1.00 (see Table 1).

Data entry error checks. Of the 306 files available, 284 were usable (i.e., all of the necessary measures were present). Each assistant entered all of the data for all 284 files, providing two complete datasets to double check errors. Once all of the data were entered, an error-checking SPSS syntax was used which outputs the cases and variables which had discrepancies between the two entries. The assistants used this output to correct their errors. Sixty-three errors were found (< 1%). Once the errors were corrected, the syntax was run a second time. A total of 14 errors were found in the database. Again, the assistants corrected their own errors. A third and final error check revealed one error in the database. The assistants fixed this final error, making the database ready for imputations and free of keystroke errors.

Final Sample Size, Missing Data, and Invalid Protocols

Overview. Not all of the files which had the necessary measures for inclusion in the study had these measures completed in their entirety. Thus, it was important that missing data be handled in some manner. The amount of missing data varied by variable (range: 2.92-25.18%) and can be found in Table 2. Ten participants had more than 20% of all of their data missing, which was beyond the cut-off decided at the time of this study's proposal approval. These 10 records were removed from the dataset. An additional 46 cases were removed after it was determined that the MMPI profile was invalid due to an excessively elevated validity scale. This resulted in the final N=228.

Missing data. The MMPI was the only continuous variable with no missing data. For the remaining variables missing data were imputed using an EM estimation method

in SPSS. The EM estimation method was chosen because it is a maximum likelihood estimation which makes fewer assumptions of the data than other imputation processes (e.g., multiple regressions) and assumes that the values are missing at random. The variables chosen for imputation were all continuous variables which had missing values (i.e., months in prison, number of group sessions, pre-treatment subscale, post-treatment subscale, pre-denial score, post-denial score, Pre-Contemplation subscale, Contemplation subscale, Action subscale, and Maintenance subscale). It should be noted that the Motivation to Change score as well as the Clinical Change and Denial Change scores were calculated after their scale items were imputed. The variables not imputed were categorical variables or demographic variables (i.e., victim's age and offender's age).

Correlations among the previously listed variables were compared pre- and post-imputation. The average absolute value change in the correlations among the variables after imputations was 0.006 (range: 0-0.06). Because the change in the correlations was very small, it was concluded that the imputation worked as intended and preserved the data structure. The imputed variables were used in the analyses.

Determining validity of MMPI-2 profiles. Similar to the way that an outlier skews statistical results, having invalid MMPI profiles in the cluster analysis could result in clusters forming around the elevated validity scores of a few offenders which would not be representative of the data (Hair & Black, 2000). Thus, caution was used in determining which files should be included in the analyses and which could be removed. Criminal sample t-score means and recommended validity cut-off scores for scales F, L, and K are listed in Table C1 of Appendix C. This information for scales F, L, and K was used to determine the validity of the MMPI responses in the present study. Forty-six

MMPI profiles had elevations above the cut-off score on one of the validity scales and those records were removed.[13] The following chart summarizes the invalid cases and their t-scores:

Scale	T-score	Cases	Scale	T-score	Cases	Scale	T-score	Cases
F	101	4	L	83	9	K	87	1
	104	8		87	7			
	107	3		91	4			
	110	2						
	113	1						
	119	1						
	120	6						

Measures

The measures used in this study were part of the general assessment battery used during the intake procedure at the treatment facility. The records used in this study were taken from clients who had completed the program approximately two to three years prior to data retrieval and analysis for the current study. No additional measures were added for the purposes of this study. Instead, the primary investigator used the measures available to her in order to operationalize the concepts in this study and answer the research questions. All information used in this study was de-identified.

[13] To test the effect that these invalid cases may have had on the results of this study if left in the analyses, a dichotomous covariate was created in which a score of zero was given to cases with all of their validity scores within normal ranges and a score of one was given to cases with a validity score above the cut-off range. This covariate was used in the MANOVA analyses which cross-validated the clusters against continuous offense characteristics and treatment variables. After running these preliminary analyses, results indicated that variables in the analyses were insignificant regardless of the presence of the covariate, which suggested that the clusters did not differ on these variables. The covariate itself was significant for the variables Pre-Contemplation ($p<.05$), Contemplation ($p<.01$), and Motivation to Change ($p<.05$). These results suggested that the invalidate profiles accounted for more variance in those variables than did psychopathology. An analysis was also run after removing those cases with t-score elevations one standard deviation above the cut-off score (14 cases total) but leaving the other cases in the dataset and including a covariate representing the invalid cases (i.e., scores above the cut-off but below one standard deviation above the cut-off). The same pattern of results emerged. Further, authors have indicated that using covariates in clustering is counterproductive because it involves controlling for the heterogeneity which the researchers is attempting to be unveiled (Luke, 2005). Therefore, the most cautious approach which could be taken was to remove the invalid profiles from the analyses.

Clustering Variable: Psychopathology

Minnesota Multiphasic Personality Inventory, Second Edition (MMPI-2; Butcher et al., 1989). This measure was designed to assess the psychopathology and personality patterns of individuals. It is used frequently in forensic settings as an indicator of psychological functioning (Megargee, 2006). The measure includes 554 True/False items which create 8 subscales measuring the validity of the respondents' answers (see Table C1 of Appendix C), 10 basic psychopathology subscales (see Table C2 of Appendix C), 15 content scales, and several other supplementary content scales. Two validity scales (i.e., F and K) and 7 clinical scales (i.e., D, Pd, Mf, Pa, Pt, Sc, Ma) were used in the present study, each of which is described in more detail in Appendix J. The MMPI-2's reliability and validity statistics have been well-established in the literature in both forensic and general populations (Butcher & Williams, 2000).

Rationale for use of MMPI-2 in present study. It was fortuitous that the MMPI was available in the archival data and is one of the reasons why this pool of archival data was selected for use in the present study. The MMPI-2 is an appropriate measure of psychopathology in this study not only because of the success of previous studies in clustering with this measure in sex offender populations (previously discussed) but also because of the broad range of psychological problems which it assesses. The limitation of using this measure with sex offenders is that it does not include any measures of inappropriate sexual thoughts or behaviors which may be associated with sexual offending (Butcher & Williams, 2000). Though the schizophrenia scale has questions related to maladaptive sexual behavior, these behaviors are only one of the six concepts which the schizophrenia scale is proposed to assess. Thus finding an elevated

schizophrenia scale in a sex offender may be a reflection of inappropriate sexual interests but it could also signify drug use, extreme social isolation, or a thought disorder.

A different measure which could have been used was the Multiphasic Sex Inventory (Nichols & Molinder, 1984). This measure assesses cognitive distortions about sexual assault, atypical sexual interests, sexual dysfunctions, and social desirability as it relates to sexual knowledge (Nichols & Molinder, 1984). While this measure has shown acceptable reliability statistics in sex offenders (.71-.80; Nichols & Molinder, 1984) and would presumably yield interesting findings, it was not used in the present study. This measure is too focused on *sexual* psychopathology for the purposes of this study, which had the goal of understanding general psychopathology in sex offenders. Since little is known empirically about motivation to change in sex offenders, it was intended to keep the constructs used in this study broad, and, thus, able to be built upon in future research, consistent with suggestions from Tierney and McCabe (2002). The Multiphasic Sex Inventory does not fit with that goal of the study.

Another option instead of the MMPI clinical scales could have been specially derived scales from the MMPI which would have been specific to non-sexual criminals (e.g., Megargee, 1994) or sexual offenders (e.g., Langevin, Wright, & Handy, 1990a, 1990b). Unfortunately, the predictive and test-retest reliabilities as well as the successful replication of these scales have been inconsistent (Schlank, 1995), which severely limited their utility in the present study. Thus, the MMPI-2 was viewed as the best available choice in terms of clinical utility and statistical validity for the overall purposes of this study.

Comparison variables

1. Motivation to change

University of Rhode Island Change Assessment Scale (URICA; McConnaughy et al., 1983). Inspired by the TTM, McConnaughy and colleagues (1983) developed the University of Rhode Island Change Assessment Scale (URICA; also referred to as the *Stages of Change Questionnaire*) to measure the extent to which an individual is motivated or ready to change a maladaptive behavior. The URICA was another measure which the treatment facility included in their intake procedures and which was appropriate to include in this study given that it is one of the few objective measures of motivation to change available.

In completing this questionnaire, clients answer 32 questions about the extent to which they feel their problem affects them; they mark their answers by using a 4-point scale ranging from "Not at all" to "Extremely." During the administration of this measure for this study, the target problem was their most recent CSC offense. The clinician administers the questionnaire to the client ensuring that he stays focused on the target problem (McConnaughy et al, 1983). Example questions include: "I do not feel that my problem is interfering with my life" and "Changing my problem would be for the better." Participants receive mean scores on each of four subscales: Pre-Contemplation, Contemplation, Action, and Maintenance (McConnaughy et al, 1983). The URICA's items do not inquire about the Preparation stage, which demonstrated poor statistical qualities (McConnaughy, et al., 1983). (Correlations among the item subscales can be found in Tables 8a-8d). When used with a sample of offenders, the original URICA showed no group differences based on crime type and test-retest reliability ranged from

.50 to .74 among the respective subscales (McMurran et al., 1998). In the present study, the alpha for the subscales ranges from .78 to .88 (see Table 7).

After scoring the URICA, the researcher or clinician can then use this information to create motivational profiles based on the scores from all four "stages". The original authors of the URICA advised against assigning participants to one specific stage, as they emphasize that this method does not coincide with the theoretical underpinnings of the measure which, as previously described, seem to be parallel processes rather than stages (McConnaughy et al, 1983). That is, clients can have similar scores on multiple stages as they are transitioning from one stage to the next, making assignment to a stage difficult. An overall Readiness to Change (labeled in the present study as "Motivation to Change") score may also be calculated (Blanchard et al., 2003; Project MATCH Research Group, 1997, 1998). This score is the sum of the Contemplation, Action, and Maintenance subscales (which are positively correlated with one another) minus the score from the Pre-Contemplation subscale (which is negatively correlated with the other three subscales). (Subscale correlations can be found in Table 6a). The higher the participant's Motivation to Change score, theoretically, the more ready they are to change their behavior. For the present study, both the individual subscales (i.e., Pre-Contemplation, Contemplation, Action, Maintenance) and the overall Motivation to Change score were used in the analyses. The individual subscales were used in the structural equation modeling to validate Motivation to Change as a latent construct and predictor of treatment response. After the validation of this construct, only the Motivation to Change score was used.

The URICA and Sex Offenders. The URICA was recently adapted to specifically apply to sexually offensive behavior (Tierney & McCabe, 2004). This exact measure was not available for use in the present study; instead the original URICA was available in the records and therefore utilized. Tierney and McCabe (2004) revised the scale at a text level only in an attempt to maintain the underlying theoretical construction of the measure. Instead of the items stating questions about the individuals' *problem*, the items stated questions regarding their *sexual problem* specifically. The revisions of this measure did not seem substantial enough to warrant disregarding the applicability of the revised URICA's reliability and validity statistics to the present sample. This modified version of the measure demonstrates an internal reliability ranging from .81 to .90 among the subscales and a test-retest reliability ranging from .69 to .84 among the subscales (Tierney & McCabe, 2004). More details on the validation of this specific measure can be found in Appendix F. The reliability of these scales were carefully evaluated in the current study and noted previously.

2. Offense Characteristics

Client Profile/Criminall History Forms. This questionnaire, which was completed during the intake process at the treatment facility, provided general demographic information (i.e., marital status, education level, employment status, and age) as well as more specific information about the individual's criminal history. These forms were administered during the intake procedure by one of the clinic's intake workers. The intake workers read these questionnaires to the clients who then verbally provided their responses. The criminal history information gathered included type of victim (i.e., adult or child), the offender's relationship to the victim (e.g., spouse, stranger, or niece),

whether there is a history of prior offenses (i.e., yes/no), whether the offense involved penetration of the victim (i.e., yes/no), the gender of the victim (i.e., male or female), and whether the offender was intoxicated (with drugs or alcohol) at the time of the offense (i.e., yes/no). In the present study, each of these offense characteristics was coded as a categorical variable and used in chi-square analyses to examine descriptive differences between clusters. Material obtained from this form was supported by the information presented in the offenders' psychological reports, which were also in the offenders' files gathered from the treatment facility. These reports also provided additional information not found on this questionnaire such as the degree of sexual assault, victim's age, time spent in prison or jail, all of which were included in the analyses.

3. Treatment behavior

a. Treatment Attendance. Each time the offender went to the treatment facility for therapy he signed a sheet in his file. This sheet was the most accurate piece of information recording the attendance at the group sessions and, thus, was used to obtain the number of group therapy sessions each offender attended. The number of sessions attended was used as a continuous variable and entered into a MANOVA to compare psychopathology clusters.

b. Treatment Completion. Using a report from the files at the treatment facility, information on whether a member completed treatment or not was gathered. This variable was dichotomized in the analyses as "Yes—treatment was complete" or "No—treatment was not completed." Treatment was considered complete if the group facilitator noted in the report that all of the treatment requirements were met for that particular offender. If the group facilitator reported that the requirements were not met or

if the offender was removed (or voluntarily dropped out) of treatment, treatment was coded as incomplete in this study. This variable was numerically coded to represent its dichotomous structure and then used in a chi-square analysis to test the differences between psychopathology clusters on treatment completion.

c. Pre- and Post-Treatment Variables. Also present in the treatment facilities files were monthly reports which the group facilitator completed assessing each sex offenders' Psychopathology, Denial, Risk of another sexual offense, Impulsivity, and Maturity. These measures were included in the analyses as an additional test of how motivation to change may be related to treatment responses. Each of these variables was scored on a scale of 1 to 10, which 10 indicating greater presence of a particular pathology. (Before analyses were run, the Maturity variable was recoded so that higher levels indicated less maturity). Though these reports were supposed to be completed monthly, they were not consistently available in the files. Thus, only the first month's scores and the last month's scores (i.e., those in the final treatment report) were used in the analyses. If an offender did not complete treatment (20% of total sample), their post-treatment scores were coded as the same as their pre-treatment scores, indicating no change.

A scale reliability analysis was run on these items to see if pre- and post-treatment scales could be created. Results indicated that Psychopathology, Maturity, Impulsivity, and Risk formed a reliable scale but if Denial was included with that scale the reliability decreased (see Tables 9a and 9b). This pattern was consistent in both the pre-treatment and post-treatment items. Thus, one pre-treatment and one post-treatment variable were created (i.e., summed) which included Psychopathology, Maturity (reverse-coded), Impulsivity, and Risk. This total score was labeled Pre-Treatment Score or Post-

Treatment Score. In addition, the pre- and post-treatment Denial was included in the analyses as a separate variable. Each of these variables was coded in a manner such that higher scores indicated more maladaptive pathologies.

Using EM estimations in SPSS 16.0,[14] 18% of the pre-treatment scores were imputed. One case's post-treatment score was imputed. This case was the only one which completed treatment but did not have a treatment response measure. For all other cases in which treatment was completed an outcome measure was present in the file. The same 18% whose pre-treatment scores were imputed also did not complete treatment. Therefore, rather than imputing the post-treatment scores, their post-treatment scores were coded as equivalent to their pre-treatment scores. For denial, 14% of the pre-denial scores were imputed using the same methods as the pre-treatment scores. Two cases' post-denial scores were imputed because these two cases completed treatment but did not have a treatment response measure in their file. The remaining cases which did not complete treatment had their post-denial scores coded as equivalent to their pre-denial scores.

Additionally, a Clinical Change score and Denial Change score were created by subtracting the pre-treatment scores from the post-treatment scores. This process resulted in negative values because the pre-treatment scores were higher than the post-treatment scores; that is, before treatment the sex offenders had higher scores on these maladaptive pathologies than after treatment. Scores were not reversed to be positive; thus *negative* scores are indicative of *positive* change conceptually (i.e., functioning improved).

Summary

[14] SPSS 16.0 was only used to impute the data. SPSS 14.0 was used to run the analyses. The reason for this is that SPSS 14.0 did not have the imputation methods needed for this study but the primary investigator did not have access to SPSS 16.0 for all of the analyses.

The following chart summarizes the measures which were used and also includes the person(s) responsible for administering the instruments and approximately when in the treatment process this information was gathered:

Measure	Administrator	When Administered
MMPI	Licensed Psychologist	Intake
URICA	Intake Worker	Intake
Client Profile/Criminal History	Intake Worker	Intake
Treatment Attendance	Administrative Assistant	Each Treatment Session
Treatment Completion	Group Facilitator	Last Treatment Session
Pre-Treatment Variables	Group Facilitator	First Treatment Session
Post-Treatment Variables	Group Facilitator	Last Treatment Session

Note to Chart. The same licensed psychologist administered the MMPI to each of the sex offenders using the tape recorded version of the MMPI. The intake workers varied depending on when the clients entered treatment; thus, there is no consistency in who administered the forms. The administrative assistant signed in each client at each session. The same group facilitator reported treatment completion and clinical ratings for all of the sex offenders.

Data Analyses

Cluster Analysis. Both agglomerative hierarchical and iterative (k-means) cluster analyses were used in this study in order to maximize within-group (i.e., cluster) similarities and minimize between-group similarities. Agglomerative hierarchical clustering procedures conceptualize each case as a cluster and then group those cases with each other based on within-group and between-group means. Because the agglomerative approach can be used with larger sample sizes (Rapkin & Luke, 1993), this approach was used here. In the present study, Ward's method was used because the focus in assigning cases to a cluster is on maximizing between-group heterogeneity and minimizing within-group heterogeneity rather than on matching a single case to the overall cluster (Rapkin & Luke, 1993).

The iterative approach involves assigning cases to a particular cluster based on the researcher's predetermined specification of the number of clusters and the "cluster seed" (i.e., the mean of all cluster variables for each individual randomly assigned in the first

clustering attempt) expected in the sample (Hair & Black, 2000; Luke, 2005; Rapkin & Luke, 1993). The added advantage of this approach is that it allows cases to be reassigned to clusters (Rapkin & Luke, 1993). The cluster seeds are recalculated when new cases are added, after which cases may be reassigned to different clusters if their means better match the new mean of another cluster. The result is a set of more homogeneous (within-group) clusters (Rapkin & Luke, 1993). Please see Appendix K for more background about clustering approaches.

Cross-validation. Once clusters were formed using the above mentioned clustering techniques, they were compared based on a theoretical or empirical understanding of why the characteristics associated with each cluster emerged (Hair & Black, 2000). This was an essential feature of the cluster analysis and in applying meaning to the clusters. If the clusters are not validated then there is no justification for the resulting clusters and less viability for their patterns. Either ANOVAs or chi-squares are used to examine differences between these clusters. In these analyses, the clusters served as the between group factor and the variable chosen to validate the clusters serve as the outcome.

Structural equation modeling. To test the hypothesis that motivation to change is a valid construct in sex offenders and a valid predictor of treatment responses, a structural equation model was conducted using Amos 6.0 (Arbuckle, 2005).

RESULTS

The total number of records used was 228. Approximately 73% of the sample was Caucasian, 69% had at least a high school diploma, 57% was single, and 56% was employed. The average age was 34.6 years. Eighty-one percent of the sample had child victims. Continuous variables (except offender's age, victim's age, number of children, and the MMPI) were imputed using EM estimations (see Methods section for details). Detailed descriptions of the means, ranges, missing data, skew, and kurtosis can be found in Table 2; Table 3 provides a description of the categorical variables.

Hypothesis 1: Sex offenders will form into at least five homogenous clusters based on their psychopathology traits

Cluster structure. To evaluate whether clustering was the correct statistical approach for the data in this study, three steps were taken: Step 1) initial iterative clustering; Step 2) agglomerative hierarchical clustering; Step 3) final iterative clustering. These steps were employed given the research which indicates that, separately, iterative and hierarchical clustering approaches have shortcomings which can be minimized when these two techniques are used in combination (see Appendix K). To compensate for the shortcoming of the iterative approach, the agglomerative hierarchical approach was used in conjunction with the iterative approach. The cluster means from the hierarchical solution were then fed into an iterative cluster where the data was iterated multiple times until maximum heterogeneity was achieved.

Step 1: Initial iterative clustering. The purpose of the initial iterative cluster was to gain a preview of the likelihood of forming a certain number of clusters in the dataset. In this analysis, the researcher inputs the number of clusters to search for in the clustering

variables based on theory or findings from previous research. For this study, the initial iterative cluster analysis was an exploratory step to determine if the hypothesized five-cluster solution or another solution would produce meaningful clusters. Thus, the five-cluster solution was analyzed, as were three- and four-cluster solutions. These cluster solutions were chosen so that the cluster sizes would allow for sufficient power in running the cross-validation analyses. In selecting the final cluster solution, the goal was to maximize the number of clusters which provided clinically significant scales but which were not conceptually repetitive (i.e., interpreting one cluster did not result in the same understanding of their emotional and behavioral pathology as another cluster). These criteria were chosen in accordance with researchers' suggestions (i.e., Rapkin & Luke, 1993).

Multicollinearity of scale Sc. Per previous research, the MMPI scales included in the analyses were F, K, D, Pd, Mf, Pa, Pt, Sc and Ma. The inter-correlations between the MMPI scales showed a high correlation between scale Sc and scales F, Pa, and Pt (i.e., correlation above 0.70; see Table 6b).[15] This multicollinearity could cause problems in the cluster solution, such as redundancy in cluster groupings (Hair & Black, 2000). Having highly correlated variables in clustering also results in those variables being weighted in the analyses and assumed to be more significant in the analyses than they actually may be (Hair & Black, 2000). The result could be that the software program treats these highly correlated variables as one variable that is weighted rather than examining the individual contribution of each variable (e.g., distribution of the variable throughout the data; Hair & Black, 2000). This statistical assumption could result in the

[15] The correlations reported in Table 6b are prior to the removal of the 46 sex offenders with invalid profiles (i.e., n=274). However, after those 46 offenders were removed, scale Sc continued to be highly correlated with scales F (r=0.74) and Pt (r=0.75) but not Pa (r=0.61).

formation of clusters around the correlated variables which may not be a true representation of the patterns in the dataset.

Because Sc was the common variable in each of the high correlations, including it in the analyses was questioned. To test whether scale Sc should be included in the analyses, the initial iterative cluster analysis (Step 1) was run twice using SPSS: once with Sc included and once excluding Sc. Conducting the initial iterative cluster twice would allow for an examination of the pattern of means as well as the conceptual meaning of the clusters if scale Sc is included and if it is removed. In total, this initial clustering step produced six clusters: a three-, four- and five-cluster solution including scale Sc and a three-, four-, and five-cluster solution excluding Sc (see Tables 10a-12b). The evaluation of these cluster solutions (discussed next) indicated that Sc needed to be removed from the analyses.

The results of the initial iterative clustering indicated that the same general pattern of mean elevations, and thus conceptual interpretation, was evident in the clusters regardless of if scale Sc was present in the clusters. [16] Two changes were noticeable when scale Sc was removed. First, the means in the clusters which included Sc were somewhat higher than the cluster means which excluded Sc. Therefore when Sc was removed from the cluster analyses, there was a general decrease in the cluster means and some variables which had reached clinical significance when Sc was included no longer did so. This decrease affected scales Pd and Pa of cluster two in the four-cluster solution (see Tables 11a and 11b for a comparison). These variables reached clinical significance when Sc was included but no longer did so when Sc was removed, with Pa decreasing

[16] To avoid confusion, the conceptual interpretation of each of the six initial iterative clusters can be found in a footnote accompanying each respective table (Tables 10-12b). The conceptualization of the final cluster solution used in the analysis will be detailed in this text.

more than Pd (i.e., nearly five points). While the cluster pattern which included Sc and significant levels of Pd and Pa could be a true reflection of the patterns of the data, it could also be the case that the correlation between Sc and Pa led to those variables being weighted and more participants with moderately elevated Sc and Pa scores being added to that cluster. Then, when Sc was removed, Pa was treated without bias and the sample was distributed only according to the offenders' scores. Because scale Pd had only just crossed the threshold for clinical significance when Sc was included (i.e., t-score mean was 66.70), it is possible that its lack of significance after Sc was removed was due to the general decrease in means for all of the variables after Sc was removed rather than to a specific problem with multicollinearity. These results suggest that having Sc in the analyses may be negatively influencing the cluster patterns.

The second observation which may be evidence that Sc is negatively affecting the cluster solutions regards cluster five of the five cluster solution (see Tables 12a and 12b). In this solution, when scale Sc is included in the analyses, scales Pa and Pt (which are two of the scales with which Sc is highly correlated) are below the clinical cut-off. However, when Sc is removed from the analyses, these two variables meet or surpass the clinical cut-off. The means for these two variables (as well as scale F with which Sc is also highly correlated) increased approximately five points when Sc was removed. This result again suggests that when Sc is included in the analyses preference is given to the highly correlated variables when adding new cases into the clusters. In this particular case, the cases with high Sc and Ma scores may be added to cluster five, ignoring the elevation of scales Pa and Pt. Then, when Sc is removed from the analyses, the elevations and contribution of scales Pa and Pt is revealed. Taken together with the

previously described problems in the cluster solutions, it was concluded that multicollinearity with Sc may be interfering with the precise formation of the clusters. To maintain the integrity of the data and internal validity of the study, a more cautious approach was taken and Sc was removed from subsequent cluster analyses.

Five-cluster solution. Of the three-, four-, and five-cluster solutions which excluded scale Sc, the five-cluster solution captured the heterogeneity of the data better than the three- or four-cluster solutions (see footnotes of Tables 10b, 11b, and 12b for conceptual interpretations of the three-, four-, and five-cluster solutions, respectively).

The three-cluster solution included one cluster which had no MMPI scale elevations above 65; one cluster with intermediate elevations (i.e., scores ranging from 60 to 65); and one cluster with several high elevations (i.e., scores above 70). While these clusters appear to differ in their mean elevations and, thus, their conceptual interpretations, not much can be interpreted about a set of clusters with low, intermediate, and high MMPI means other than that they differ at least in degree or severity of psychopathology.

The fourth cluster solution included a cluster with means below clinical levels, similar to the three-cluster solution. Also similar to the three-cluster solution was a cluster with high elevations on the MMPI scales. The last two clusters in the four-cluster solution both had intermediate elevations. The factor which distinguished these clusters is the extent of the elevations on scales F, Pd, Pa, and Pt. As will be explained later, both the scale which is elevated and the extent of the elevation have a significant effect on the conceptual interpretation of these clusters. Thus, though the two intermediate scales have elevations on the same scales, the extent of the elevations will make a difference in

interpretation (see footnote of Table 11b for conceptual interpretation). Based on these results, the four-cluster solution becomes more conceptually meaningful than the three-cluster solution because of the type and extent of elevations.

However, the five-cluster solution was still examined to determine if an additional meaningful cluster emerged. The five-cluster solution re-produced some of the previous clusters and introduced new clusters as well (see Table 12b). The first cluster (n=84) contained MMPI scores below the clinical cut-off (i.e., psychologically healthy offenders). The second cluster (n=60) had intermediate elevations (i.e., between 60 and 65) on scales F, Pd, Pa, and Pt (i.e., hostile and aggressive offenders). The third cluster (n=40) had scores below the clinical cut-off except on scale F (i.e., exaggerating or malingering offenders). The fourth had elevations on scales F, D, Pd Pa, and Pt above 65 and some above 75 indicating severe psychopathology (i.e., severely disturbed offenders). The final cluster had elevations above 65 on F, Pd, Pa, Pt, and Ma indicating significant psychopathology but not as significant as the fourth clusters. These offenders may have personality disorders (Megargee, 2006).

While the three- and four-cluster solutions did produce interpretable results, the five-cluster solution had the most potential in not only capturing the heterogeneity of the sample but also in providing meaningful conceptual interpretations. Based on these initial analyses, the five-cluster solution continued to be hypothesized as the best fit for the data. This solution fit the criteria of producing the most clusters without being repetitive in conceptual meaning. This solution also produces clusters which are of appropriate sizes for the cross-validation analysis.

Step 2: Hierarchical clustering. Because agglomerative hierarchical clustering is an exploratory statistical approach that allows the natural patterns of the data emerge, it was used next to evaluate the viability of the five-cluster solution in this sample. Unlike the iterative clustering process, the hierarchical process does not allow the researcher to specify the number of clusters to search for in the data. Rather, it automatically outputs the number of cluster solutions that it finds in the data and which fit the criteria of maximizing between-group heterogeneity and uses the amount of change in the cluster means as a indication of whether that particular case fits closely with the other offenders in that cluster. The hierarchical analysis began with the 228 cases in this study and clustered them to produce a dendrogram which showed a 17-, nine-, four-, three-, two-, and one-cluster solution (see Figure 1). Because a five-cluster solution did not emerge in the hierarchical analysis, it was concluded that the five-cluster solution previously described in Step 1 is not the best fit for the data. The means for the three-, four-, and nine-cluster solutions were examined to determine if one of these solutions had conceptual meaning for the study (see Tables 13a-13c). These solutions were chosen for further analyses predominantly because they had the greatest potential for yielding heterogeneity without producing clusters with sizes so small that statistical power would be lost in the cross-validation analyses. However, before conceptually describing these cluster solutions, an explanation of how these conceptual descriptions are being derived is warranted.

MMPI-2 code typing. Each cluster in the present study had its own conceptual meaning which could be explained via MMPI code typing. Code typing involves interpreting the MMPI profile based on a single elevated scale (i.e., above the clinical

cut-off score of 65) or the two highest scales (above 65) in a profile (Butcher & Williams, 2000; Megargee, 2006).[17] The code types which will be used to help explain the clusters of this study were developed via MMPI validation studies and not via cluster analysis. The MMPI code typing is only used here as a guide to help underscore the most prominent feature of the offender. Given that not all of the clusters of offenders in this study had MMPI scales above 65, not all scales can interpreted as important to the manifest behaviors of those offenders. Thus the present study will "layer" the psychopathology during the conceptual description beginning with the emotional and behavioral characteristics of the highest score(s), then the next highest, if more than two scores are elevated above 65. The MMPI validity scales were also described conceptually for each cluster but they are not traditionally interpreted as part of the code-typing and, thus, will be another "layer" in the psychopathology description. In this study, scores below 65 are not interpreted unless otherwise noted and justified via previous research.

Clinical scale elevations are associated with different emotional and behavioral characteristics depending on which other scales are also elevated (Butcher & Williams, 2000). In criminal samples, scale Pd is the single most elevated scale on the MMPI for both males and females (Megargee, 2006). However, not all criminals act in the same manner. It is the other scales which may be elevated along with scale Pd as well as the degree of elevation (i.e., t-scores of 55-64, 65-75, or greater than 75) that defines the characteristics which may manifest as a result of the individual's profile. In the

[17] Code typing also involves deciding if each profile is "well-defined," which typically means that the profile scale has a t-score elevation at least 5 points above the mean. For the sake of simplicity, discussions of whether a profile was "well-defined" were excluded from this study. However, the extent of elevations above 65 was considered in that higher elevations meant different emotional and behavioral outcomes even on the same scale.

description of these clusters, single elevation or two-point code types will serve as the base for the cluster conceptualization and then the elevations of other clusters (if any are present) will serve to further explain the possible emotional and behavioral characteristics of the offenders.

Conceptualizations of clusters. In the three-cluster solution, the first cluster was comprised of 107 sex offenders whose t-scores were below clinical levels (see Table 13a). These offenders may be classified as having psychological profiles within normal or average limits (Megargee, 2006).[18] The second cluster was comprised of one clinical elevation on scale Pd, which fell below 75. Offenders with this profile may be characterized as dishonest or arrogant (Megargee, 2006). The third cluster was comprised of offenders with t-score elevations on scales F, Pd, Pa, and Pt. Scales Pd, Pa, and Pt had scores between 65 and 75 while scale F was above 75. Offenders with these elevations may be hostile, aggressive, and suspicious (Megargee, 2006). Similar to the three-cluster solution of the iterative analyses, this three-cluster solution provided clusters with some distinct conceptualizations but may not be a full representation of the heterogeneity of the data.

In the four-cluster solution, the first and second clusters of the three-cluster solution were replicated (see Table 13b). The third cluster divided into two separate clusters. One of these clusters had t-score elevations above 70 on scales F, Pd, and Ma. These offenders may be impulsive, aggressive, and manipulative (Megargee, 2006). The last cluster in this group was characterized by t-score elevations on scales F, D, Pd, Pa, and Pt. Offenders with these elevations tend to be emotionally and behaviorally unstable

[18] Megargee (2006) or Butcher and Williams (2000) were cited throughout the conceptualization of these clusters because of the code types they describe in their MMPI books, which were relied upon for the inferences proposed throughout this section about the types.

(Megargee, 2006). This solution was similar to the iterative five-cluster solution (earlier), except it does not have a cluster with only an elevated F scale. The spread of heterogeneity in the four factor solution will provide important interpretations for the purposes of this study.

The nine-cluster solution was unsatisfying. The first observation that may be a disadvantage of this solution is that two of the clusters have less than ten cases (N=7 and N=9). It may be difficult to detect the effects in the cross-validation analyses with clusters which are so small, especially when conducting the chi-square analyses and these clusters have to be divided into smaller cells. However, if this cluster solution were to be used in this study, these small clusters of offenders may have particular characteristics which distinguish them from the rest of the sex offenders and those unique characteristics may be worth exploring.

Another potential disadvantage of this solution is that the first four clusters all have means below the clinical cut-off. They may be unlikely to produce significant results during the cross-validation (i.e., these four clusters may not be significantly different from each other though they may be significant from other clusters) or to lack clinical value. Having these redundant clusters may also result in less power to detect effects in other clusters which are distinct from each other. Clusters five, seven, and nine of this solution conceptually mimic clusters two, three, and four, respectively, of the four-cluster solution; however, they have many fewer cases per cluster compared to the four-cluster solution. The last two clusters of this solution (clusters six [N=7] and eight [N=31]) are new clusters with new conceptualizations compared to the other cluster solutions. However, given the size of cluster six (N=7), it may be difficult to detect

effects for this cluster. Overall, the weaknesses with this solution were judged to outweigh the potential benefits of including the additional clusters.

Based on the results of the initial iterative analyses and the agglomerative hierarchical analyses, it appeared that the four-cluster solution was the best for this dataset. It maximized the number of clusters with clinical scale elevations while preserving large cluster sizes and thus power for cross validation.

Cluster solution stability. Two more hierarchical analyses were run to test the stability (or reliability) of the four-cluster solution. Using a function in SPSS, the dataset was randomly split into two groups, each with a sample size of 114. An agglomerative hierarchical analysis was conducted for each half to determine if a four-cluster solution was evident in each half of the data. If a four-cluster solution was present in both halves, then it can be concluded with greater confidence that the four-cluster solution is a reliable choice for representing the data (Rapkin & Luke, 1993). The hierarchical solution for the first half of the dataset yielded a 14-, eight-, five-, four-, three-, two-, and one-cluster solutions (see Figure 2), thus supporting this conclusion. However, the hierarchical analysis for the other half of the data produced a 15-, seven-, five-, three-, two-, and one-cluster solutions (see Figure 3), with no four-cluster solution. While it is not uncommon to yield inconsistent cluster solutions in smaller sample sizes (Rapkin & Luke, 1993; Steinley, 2003), further examination of this five-cluster solution was warranted to determine if it was similar to the four-cluster solution found in the full dataset.

In examining the means of the four-cluster solution of the first half and the five-cluster solution of the second half, there were conceptual parallels between them (see Figures 2 and 3). Each solution had a cluster in which scale Pd was elevated or close to

elevated (i.e., antisocial offenders), another cluster featured the elevated F plus elevations in either Pa or Pd in the low 60s (i.e., exaggerating or malingering offenders); and a third cluster with elevations on scales F, D, Pd, Pa, and Pt (i.e., severely disturbed). Each solution also contained a cluster with no scale elevations (i.e., within normal limits offenders). The difference between the clusters were that the five-cluster solution included a cluster with extreme elevations on scales F, D, Pd, Pa, and Pt.

Thus, some evidence supported a four- and some a five-cluster solution. In all, because the five-cluster solution was not present in the hierarchical analysis which included all 228 cases, it was concluded that the four-cluster was the most appropriate fit.

Step 3: Final iterative clustering. Having confirmed through the hierarchical analyses that the four-cluster solution would be a meaningful solution for the data, another iterative analysis was conducted to finalize the clusters (that is, the assignment of individual cases). Similar to the process of an exploratory and confirmatory factor analysis, the purpose of this analysis was to refit the clusters based on the results of the hierarchical analyses rather than exploring the fit of other solutions as with the first iterative analysis.

Two changes were made for this iterative analysis compared to the first iterative analysis. First, only the four-cluster solution was requested of the statistical program. Second, in this final step of the cluster analyses, the cluster means from the hierarchical four-cluster solution (Table 13b) were used as the initial clustering seeds (i.e., starting points) in the final iterative clustering solution. Using the means for the hierarchical analysis and specifying the number of clusters to examine, the final iterative analysis has

more information to use to refit the clusters and produce the final cluster means (see Table 14 and Figure 4).

The resulting solution produced four clusters which had distinct means and were conceptually meaningful. The conceptualization of the four-cluster solution (see below) did not change in any of the prior clustering steps, which indicates stability in the solution.

This final four-cluster solution does not strictly support Hypothesis 1 because less than five clusters were formed. However, it did support the existence of meaningful clusters and therefore was used to address the questions in the subsequent hypotheses.

To help better understand the changes that occurred among the cases during the last two steps (the four cluster hierarchical and final four cluster iterative analyses), Table 15 details the case migration and cluster assignment for those two analyses. Also, Figure 5 depicts the dissolution of the hierarchical clusters and reassignment of the cases in the final iterative analysis. (Because the initial iterative analysis was exploratory and there was no support yet that the five-cluster solution was accurate, it was not included in Table 15). The purpose of Table 15 and Figure 5 is to illustrate the finalization of the clusters and the importance of using both types of cluster analysis to create the cluster solution. The Table shows that approximately 24% of the cases in the four-cluster solution hierarchical analysis (i.e., Step 2) migrate to new clusters in the final four-cluster iterative analysis (i.e., Step 3). These changes occur because of the inclusion of the hierarchical cluster means in the final iterative cluster solution. It is not surprising that such changes took place in the final analysis because the iterative process involves reiterating cases until they most closely fit the means of a particular cluster (including the

initial seed), whereas the hierarchical cluster does not reassign cases when the means of the clusters change. Thus, though it may appear at first that the case migration in Table 15 and Figure 5 demonstrates instability in the cluster assignment, it actually demonstrates the importance of using the iterative solution so that the cases can be reassigned to new clusters as the means change. It was concluded that the four-cluster solution was reasonably well supported.

Conceptualization of final cluster solution. Four distinct clusters formed in this sample of sex offenders. They vary in severity of psychopathology but have scale Pd as a core characteristic. The increase in severity may have particular meaning for offense and clinical characteristics, which is a question of cross-validation and will be analyzed below. The conceptual meaning presented here is meant to apply interpretation to clusters based only on their psychopathology profiles.

These clusters were conceptually distinct based on an evaluation of the elevations above 65 on the MMPI scales, which the following chart summarizes:

Cluster	Scale Elevations
Within Normal Limits (WNL; N=86)	No elevations
Hostile (N=69)	Pd
Manipulative (N=36)	F, Pd
Very Disturbed (N=37)	F, D, Pd, Pa, Pt

The first cluster was labeled Within Normal Limits (WNL). This cluster included the largest number of cases (N=86), consistent with previous research which has found that the "within normal limits" profile is the most common (though not itself a majority) profile evident in an efforts to type samples of offenders (Megargee, 2006). Criminals with this pattern of scores tend to be psychologically adjusted, have less severe diagnoses (e.g., adjustment disorders), and good treatment prognoses (Megargee, 2006). Also,

though scales D and Pd are not in the clinically significant ranges, their scores place them in the moderately elevated range (i.e., t-score of 55-64), which is interpretable. Because of scale D (i.e., depression), this cluster of sex offenders may also have a pessimistic cognitive style. The Pd score indicates that these offenders may be extroverted and superficially charming (Megargee, 2006). However, as a reiteration, these scales are not in clinically significant ranges. Comparing this cluster to those findings of previous research, in two of their clustering studies Kalichman et al. (1989, 1992) had clusters of offenders with MMPI scores within normal ranges.

The second cluster (N=69), which was labeled as Hostile, is characterized by a single elevation between 65 and 75 on Scale Pd and a Scale Pa score just below clinical significance. Kalichman et al. (1989) and Duthie and McIvor (1990) both reported clusters with single clinical elevations on scale Pd. Criminals with this profile tend to be argumentative, hostile, and suspicious of others' intentions (Megargee, 2006). They also can be arrogant and dishonest. They have problems listening to authority and are difficult to manage in prison and while on probation or parole. Their difficult with others can negatively affect their interpersonal relationships as well, making them less likely to have stable marriages (Megargee, 2006). They may be resistant to engaging in treatment, resentful of the therapist, and quick to scapegoat their problems (Megargee, 2006).

The third cluster (N=36), labeled as Manipulative, has a clinically significant scale Pd (t-score between 65-75) which indicates that they may share some of the emotional and behavioral problems of the offenders in the Hostile cluster such as disagreeableness. However this third cluster also has an elevated scale F (t-score above 75). These two scales elevated together are indicative of malingering and symptom

exaggeration (Megargee, 2006). This cluster was not found in any previous clustering studies. These offenders may also engage in manipulation perhaps with the intention of being classified as criminally insane or to receive some type of special psychological service. Engaging in treatment may be difficult for these individuals as they often have difficulty accepting responsibility for their actions or appreciating the consequences of their behaviors (Megargee, 2006). Because this cluster also has a scale Ma score which is above 60, it could be the case that these offenders are highly energetic, have a high sense of self-confidence, and deny the seriousness of their actions (Megargee, 2006).

The final cluster (N=37), labeled as (Very) Disturbed, is characterized by elevations on Scales F, D, Pd, Pa, and Pt. These are the most severely disturbed offenders of the clusters. While severely disturbed offenders were found in the clusters of previous studies, the same scales were not elevated as here. In this cluster scales Pd and Pa have the highest elevations on the clinical scales (above 75), thus their two-point code type was used in the descriptions. However, because these score elevations are above 75 and they have scales F, Pa, and Pt elevated as well, these offenders can be interpreted in different ways from the Hostile cluster which also had elevations on scales Pd and Pa. The Disturbed offenders may be suspicious of others, impulsive, and difficult to manage (Megargee, 2006). Because their scores are above 75, they may also engage in violent acting out. They tend to lack empathy and genuine care for other people, making them less likely to form a relationship and commit to it. These offenders also may struggle with substance abuse and have a criminal record. Because of the clinically significant scales D and Pt, these offenders may display severe depression and anxiety symptoms, appear agitated, have feelings of worthlessness, and possibly express suicidal

thoughts or behaviors (Megargee, 2006). Because of the number of scales which reach clinical significance in this cluster, the scale F score may be elevated due to acute psychological distress rather than to malingering (Megargee, 2006). For treatment, these offenders may want to be in therapy in order to gain some symptom relief but they also may have difficulty engaging in the treatment process due to the severity of their symptoms (Megargee, 2006).

Interestingly, scales K and Mf do not reach clinical significance in any of these clusters. In previous clustering research (e.g., Duthie & McIvor, 1990), these scales appeared to be important factors in the psychopathology of sex offenders. Scale K was proposed to be associated with treatment attendance (Kalichman et al., 1990) and scale Mf has been associated with the selection of victims (Erikson et al., 1987). However, in the present sample, neither of these variables had a prominent presence in this sample. Because cluster analysis is sensitive to the presence of unimportant or non-theoretically based variables in the analyses, removing scales K and Mf from the analyses was considered. However, preliminary hierarchical analyses without these two scales produced unstable clusters with unevenly distributed cluster sizes. Therefore, it could be the case that even though these scores are not meeting clinical significance in the clusters, their presence in the solution is providing stability and helping to hold the clusters together.

Hypothesis 2: The clusters will differ on offense characteristics such as victim status

To ensure that the clusters were significantly different from one another in severity, a MANOVA was run comparing the MMPI clustering variables (i.e., F, K, D, Pd, Mf, Pa, Pt, Ma) between the clusters. Results indicated that the clusters are

significantly different from each other on the MMPI scales, meaning that the cluster analysis did create groups which maximized the between group heterogeneity (see Tables 16a-16b). This result does not indicate that these clusters are distinct types but it does indicate that they are distinct clusters with significant differences between them in terms of psychopathology. Therefore, the cross-validation analyses were next completed as proposed.

MANOVA and chi-square analyses (SPSS) were used to cross-validate the clusters on offense characteristics. A MANOVA[19] was run to test the between group differences on the three continuous offense variables (i.e., age of offender, months in prison, victim age). (Also, because the prison time variable was one of the imputed variables, a covariate representing the number of variables each case had imputed for the study was added as a covariate). The remaining offense variables, which were categorical, were analyses via chi-square statistics. In both sets of analyses, cluster membership served as the between-groups variable and each case received a code (i.e., 1, 2, 3, or 4) which coordinated with that case's assigned cluster. Overall, results indicated that the offenders' age, drug use at the time of the offense, the gender of the victim, and having a juvenile criminal history distinguished the clusters. Results for all of these analyses are show in Table 17.[20]

An analysis of demographic variables indicated that the clusters did not differ significantly on race, education, marital status, or current employment (see Table 17).

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[19] A MANOVA was chosen as the statistical approach to minimize the type I error associated with running several individual f-tests.

[20] Table 17 provides a summary of the cross-validation analyses including means and standard deviations (or percentages if a chi-square analysis was run) for each cluster for each variable in the analyses. Also provided in this table are chi-square and f-test statistics. The table is organized into demographic characteristics, offense characteristics, and then clinical variables.

The offenders did differ in parenthood, with the Hostile offenders being more likely to have children than any of the other clusters of offenders.

In terms of the offenders' demographic characteristics, one crosstab with chi-square statistics was run, outputting five separate chi-square tests for the five categorical demographic variables (i.e., race, education, marital status, employment, parenthood). Results indicated that the parenthood variable was statistically significant with the Hostile offenders being more likely to have children (74%) than any of the other clusters (see Table 17). No other categorical demographic characteristics were statistically significant. It is possible that the Hostile offenders were more likely to have children because they are older and had more years to engage in romantic relationships. An ANOVA was run to test whether the clusters differed by the offender's age. Tukey post-hoc analyses were conducted to find which clusters were statistically different from one another. Results indicated that the Hostile cluster was significantly older (age: 39.83) than the WNL (age: 31.46) and Manipulative (age: 31.69) clusters but not the Disturbed cluster (age: 34.88). Interestingly, the average age of the Hostile offenders falls near what has been called the "burnout" point for offenders (of people with antisocial personality disorder; APA, 2000). It is possible that the single t-score elevation on scale Pd which characterizes this group represents the residual effects of an offender who had reached his burnout point. Further analysis of this cluster's offense characteristics could shed more light on this possibility.

A crosstab with chi-square statistics was used to determine if certain categorical offense characteristics differed by cluster membership: offense type (i.e., CSC 1, 2, 3, or 4), use of penetration, alcohol use around the time of the offense, drug use around the

time of the offense, victim status (i.e., adult or child), victim gender, relationship to victim (i.e., did they know the victim), supervision status (i.e., parole or probation), any prior offenses in adulthood (i.e., sexual or nonsexual crimes), and having a juvenile record. Each variable is coded dichotomously except offense type, which has four categories. Separate chi-square statistics were generated for each of the listed variables and examined for significance at $p<.05$. Results indicated that none of these variables were significant at $p<.05$.

Overall, these results suggest no differences between these clusters in terms of their offense characteristics and only limited differences in terms of demographic characteristics. Thus this hypothesis is not supported and the clusters are not well validated on these indictors. The lack of significance between these clusters could be due to selecting a cross-validation measure which does not specifically address sex offender pathology. A better measure may have been the MSI (described in the Methods section) which assesses maladaptive sexual psychopathology (e.g., rape fantasies) rather than criminal sexual activity as in this study.

Hypothesis 3: Motivation to change will form into one construct which will predict both treatment attendance and completion for sex offenders

Structural equation modeling (Amos 6.0) was used to test motivation to change as a latent variable in this sample. The model was run in two parts. The first part tested the structure of the four URICA subscales loading onto one latent factor (i.e., motivation to change). The URICA subscales (i.e., Pre-Contemplation, Contemplation, Action, and Maintenance) were placed in the model as the indicators loading onto the latent motivation to change construct. In order for the model to run properly, each of the four

residual weights and one of the indicator paths (i.e., Contemplation) were set to 1.00. Contemplation was chosen to be set to 1.00 because, when it was left to run free, it had the largest loading and there was not enough residual variance left to fit the other paths. The results indicated that the model was a good fit for the data (see Figure 6 which shows standardized coefficients). The three indicator paths were significant at $p<.001$ and the fit indices supported the hypotheses that, in a sample of sex offenders, motivation to change is single latent construct composed.

To test the validity of the motivation construct as a predictor of treatment responses, the pre- and post-treatment variables (described in the Methods section) were used. In the SEM model which validated the URICA (Figure 7) as a predictor of treatment responses, the pre- and post-variables were selected to examine if motivation to change can predict treatment response (i.e., post-treatment scores) while controlling for pre-treatment factors. If motivation to change is a valid construct in sex offenders then it should be able to predict treatment response.

As seen in Figure 7, the first part of the model is the previously described latent structure of the URICA subscales loading onto motivation to change. The second part of the model includes three paths: one is leading from the latent motivation to change construct to pre-treatment scores, another leading from motivation to change to post-treatment scores, and the last path was leading from the pre-treatment variable to the post-treatment variable. The path from motivation to change to the pre-treatment variable was set to 1.00 in order to control for pre-treatment functioning. The path from motivation to change to post-treatment scores was allowed to vary and was the path of central interest in this model.

The results presented in Figure 7 (which shows standardized coefficients) indicate that motivation to change is a significant predictor of post-treatment functioning while controlling for pre-treatment functioning. This path was significant at $p<.001$. It is also negative, which means that as motivation increases post-treatment psychological variables (i.e., impulsivity, risk of another sexual offense, psychopathology, maturity) as rated by the therapist decrease (i.e., the offenders have better functioning). The fit indices for the model were appropriate and indicated an overall good fit for the model (see Figure 7). Based on these results, motivation to change can be conceptualized as a latent construct in sex offenders and is a valid predictor of treatment response. The path coefficient for motivation predicting treatment response is below .30, indicating a low effect size.

Hypothesis 4: Clinically, these clusters will vary by their level of motivation to change and treatment variables (e.g., attendance, completion)

MANOVA and chi-square analyses were used to test this hypothesis. The variables included in the MANOVA were attendance record, pre-treatment scores, post-treatment scores, clinical change, pre-denial scores, post-denial scores, denial change, and motivation to change.[21] Tukey post-hoc analyses were conducted to find which clusters were statistically different from one another. Overall, results indicated that attendance record and motivation to change score were each statistically significant at $p<.05$.

For attendance record, MANOVA results indicated that the WNL cluster (mean: 25.43) attended sessions more frequently than the Manipulative cluster (mean: 20.67) but

[21] The URICA subscales (i.e., Pre-Contemplation, Contemplation, Action, and Maintenance) were excluded from the analyses given that these factors all load onto one latent construct (i.e., Motivation to Change).

no other cluster (see Table 17). Given that the WNL cluster has less severe psychological problems and a better treatment prognosis (Megargee, 2006), it is not surprising that they attend treatment more regularly than some of the other more psychologically disturbed offenders. This finding contradicts that of a previous study which indicated that the more severely disturbed sex offenders had higher rates of attendance than the offenders with average psychological profiles (Kalichman et al., 1990). The Manipulative cluster had the lowest attendance rate. Offenders with this profile tend to manipulate individuals for their own gain (Megargee, 2006). In treatment they may try to convince the therapist that they are either more sick than they truly are or are more motivated to change than they truly are depending on their intentions (Megargee, 2006). Therefore they may only attend treatment when they see the benefit for their own gain.

In terms of their overall readiness to change, results indicate that the Disturbed cluster (mean: 8.91) actually had a significantly higher motivation to change score than the WNL cluster (mean: 7.56). These results were unexpected given that the WNL offenders had fewer psychological problems. It could be the case that the multitude of problems that the Disturbed cluster had was motivating them to make more changes in therapy. However, it is also possible that these offenders are manipulating the therapist into thinking that they are more motivated to change than they actually are.

Overall these results support the hypothesis that these clusters would have clinical relevance, particularly regarding motivation to change. These clusters differ statistically on three of the clinical variables, with the greatest differences found between the WNL and the Disturbed clusters. Contrary to expectations, the Disturbed cluster, not the WNL cluster, had the overall highest elevations on most of the significant clinical variables.

Post-hoc Analyses

To tie all of these analyses together, several regressions were run with treatment responses (i.e., post-treatment score, post-denial scores, clinical change score, denial change score) as the dependent variables and motivation to change and dummy codes which served as proxies for psychopathology as the predictors. The purpose of these analyses was to determine if motivation to change adds value to the prediction of treatment response. No hypotheses were generated for these analyses.

Because the resulting four clusters could not be completely conceptualized as ordinal, three dummy codes were used in the analyses to represent psychopathology. Each dummy code was dichotomized to represent the presence or absence of a particular cluster (i.e., Hostile, Manipulative, and Disturbed). No covariates were used in these analyses. The regressions were run in one step with motivation to change and the three dummy codes as the independent variables and each of the treatment response variables as an outcome variable.

The first regression used cluster membership and motivation to change to predict post-treatment scores (see Table 18a). Results indicated that motivation to change was a significant predictor of treatment responses but the dummy codes were not. The beta for motivation to change predicting treatment responses was negative, indicating that as motivation to change increased, negative treatment response decreased (i.e., the offender's functioning improves). However the model only accounted for 5.3% of the variance in treatment response.

The second regression used motivation to change and the dummy codes to predict post-denial scores (see Table 18b). Results indicated again that motivation to change was

a significant predictor of post-treatment denial scores while the dummy codes were not significant predictors. The beta was negative, indicating that as motivation to change increased, level of denial decreased. The model accounted for 16.6% of the variance in the denial score.

The third and fourth regressions tested whether motivation to change or psychopathology types (as represented by the dummy codes) could predict the actual degree of change at the end of treatment. Thus the clinical change variable and the denial change variable were used as the outcome measures in two separate regressions. Results indicated that the total regression model as insignificant and neither motivation to change nor psychopathology could predict the degree of change (see Tables 18c and 18d).

Overall, these analyses indicate that motivation to change is a valid predictor of treatment response (i.e., clinician ratings of clinical functioning at the end of treatment) in sex offenders but it did not predict the degree of change (i.e., the difference between the clinician ratings of clinical functioning at the beginning of treatment and at the end of treatment) that can be expected during the course of treatment. Further, psychopathology types did not add to the prediction of treatment response as it did not predict any of the treatment response variables. In fact, when motivation to change is removed from the analyses, none of the psychopathology types (i.e., dummy codes) could predict any of the treatment response variables. Thus motivation to change alone may have greater clinical utility than psychopathology.

CONCLUSIONS AND DISCUSSION

The present study used archival data to test whether the heterogeneity in sex offenders' psychopathology could be lawfully described using a clustering technique, and whether along with motivation it helped explain variation in their treatment response. This study had four main findings. First, four sex offender clusters which varied in type and severity of psychopathology emerged. Second, these clusters differed significantly on measures of treatment behavior and responses but not on offense characteristics. Third, motivation to change was a valid single latent construct in sex offenders with each of the URICA subscales serving as indicators. Fourth, multiple regression analyses indicated that motivation to change was a better predictor of treatment response than was psychopathology. Each of these main findings will now be discussed in more detail beginning with a comparison of the clusters in the current study to those found in previous clustering studies.

Comparison of Current Clusters to Previous Clustering Attempts

The cluster analyses performed in this study improved upon the cluster studies of the past through the use of a larger sample size and a mixed sample of offenders (i.e., sex offenders against adults and sex offenders against children). Because of the mixed sample of offenders, the clusters found here may represent higher-order sex offender types which are not specific to either sex offenders against adults or sex offenders against children. While there is some overlap between the clusters found in the current study and those of previous research, this study also produces new clusters (both in regards to scales means and conceptualizations) which are potential unique contributions to the literature.

The WNL cluster is similar to one of the clusters in Kalichman et al. (1989), which analyzed adult sex offenders, and two clusters in Kalichman et al. (1992), which analyzed child sex offenders. This comparison suggests that, regardless of victim status, there are sex offenders who do not have any manifest psychopathology and these offenders comprise the majority of sex offenders in this study and each of the Kalichman studies. The Hostile cluster in the present study had a single clinical elevation on scale Pd similar to one of the clusters in each of the studies by Kalichman et al. (1989), which analyzed sex offenders against adults, and Duthie and McIvor (1990), which analyzed sex offenders against children. Similar to the WNL cluster, these results suggest that antisocial behaviors and hostility may be a central factor in sex offenders regardless of their victim status.

The WNL and Hostile clusters were the only two which were replicated from previous studies. The Manipulative and Disturbed clusters were new clusters to emerge in the current analyses. The Manipulative cluster, which displayed some of the more severe offensive behaviors in comparison to the other clusters, may represent a personality disordered sex offender but, if not, at least represents a manipulative and cunning sex offender. This cluster may have emerged in the present study because of the larger sample size and thus, the greater number offenders who would potentially have this profile. It is particularly interesting that this cluster emerged in the data even after those offenders with elevated validity scales (i.e., those who definitely were manipulative and malingering) were removed from the analyses. This result suggests that manipulation may be a genuine feature of sex offenders' psychopathology. Indeed each of the other sex offender clustering studies found a cluster which had manipulation as a feature but it

was never paired with only antisocial characteristics. Instead, it was paired with other scales which may be specific to the type of offenders being analyzed (e.g., severe anxiety and thought disorders or anxiety; Kalichman et al., 1989; Shealy et al., 1990). Thus, the Manipulative cluster found in this study could represent a core feature of a particular subtype of the sex offender population that is further developed depending on the type of sex offender being analyzed (i.e., sex offender against adult or child).

Finally, the Disturbed cluster was also a new cluster in this study, though it does conceptually mirror the presence of psychologically disturbed offenders in previous clustering studies. The interesting finding about this cluster of offenders is that, when examining the previous clustering studies, the scales for the most severely disturbed sex offenders are not consistent. That is, each cluster study produces a new set of MMPI scale elevations as representative of the severely disturbed offender regardless of the victim status associated with the cluster. Therefore, it cannot be concluded in this particular study that this pattern of scale elevations is any more representative of a higher-order psychopathology type in sex offenders than the means found in other studies. What can be deduced is that in sex offender samples there will be a cluster of offenders with severe psychopathology. This finding actually supports the previously described treatment plan for the Disturbed cluster of offenders. Because of the lack of consistency in the psychological profiles of the severely disturbed sex offender, an individualized treatment plan which addresses the specific needs and concerns of each offender may result in a successful rehabilitation.

The cluster analyses performed in this study served useful in identifying psychopathology profiles which may be key features of sex offenders' psychological

presentations regardless of their victims' status as an adult or child. The use of a large, mixed sample replicated two clusters from previous studies and yielded two new clusters not found in previous research. As described in the Results section, these clusters may not have many differences between them in terms of their offense characteristics but interpretations could still be made about the variation in psychopathology and its relationship to motivation to change and treatment. Future studies should use a mixed sample of sex offenders to test the replicability of the clusters which emerged in this study, particularly the Manipulative cluster which may provide a new understanding of the psychopathology of sex offenders.

Based on the integration of these findings, the clusters found in this study have a limited degree of external validity. The WNL and Hostile clusters may represent consistent types of psychopathology in the sex offender population. However, they could also be reflections of a general pattern in all types of criminals. Future research should compare the findings of this study to the findings of clustering general populations of criminal offenders to determine if the WNL and Hostile clusters are specific to sex offender populations. The lack of replicability of the Manipulative and Disturbed clusters between the present study and previous studies suggests that more research is needed to determine the applicability of these clusters to the sex offender population in general. Also, because the sample of the present study was mostly composed of sex offenders against children, future studies should test the validity of these clusters in a balanced sample of sex offender types.

Integration of Cluster Analyses and Treatment Implications

The next major finding of this study revealed that these clusters differed in treatment response but not offense characteristics or demographics. Further, when considering the significant treatment response variables (i.e., treatment attendance and motivation to change), only some clusters significantly differed from each other. Because of both of these findings, the clusters are only partially validated. However, even this limited validity is important to consider further from the viewpoint of generating hypotheses for future studies. The following discussion of each cluster provides a speculative interpretation of the treatment response results and the potential treatment implications associated with those results. Because of the limited significant findings, the interpretation of these findings should not be overstated.

Within Normal Limits. Based on the information collected in the present study, approximately half of the WNL sex offenders were fathers and they were the youngest of the clusters (along with the Manipulative cluster). Criminal offenders with psychological profiles within normal ranges are also likely to have a good treatment prognosis and better treatment responses than offenders with clinically elevated scales (Megargee, 2006). Consistent with these profile characteristics, the WNL cluster had the highest attendance rate of the clusters. Their motivation to change score indicates a moderate level of motivation which seems appropriate given that they are just beginning treatment. This motivation to change score also seems to coincide with the psychopathology of the cluster. These individuals are mostly well adjusted but do have some problems in their lives, such as their current sexual offense, which may be a manifestation of underlying psychological problems.

The motivation scores of the WNL offenders indicate that they were not quite committed to the idea of changing their behavior. This ambivalence may be targeted through motivational interviewing prior to participation in a group therapy program. The motivational interviewing could focus on expressing empathy to build rapport with the client and attempting to understand the difficulty that he may be facing in changing a pattern of behavior in which he has been engaging since adolescence. This motivational interviewing could also attempt to engage him in explicit discussions about the advantages and disadvantages of changing. Successful resolution of these offenders' ambivalence could result in more successful treatment response.

Hostile. Based on the information collected during this study, this cluster is most likely to be parents, perhaps because they are also the oldest of the four clusters. Because of their MMPI profile, these offenders may have problems with authority figures and thus may be resistant to the therapist telling them what is best for them to do in their lives. They also may have trouble accepting responsibility for their actions and may blame others for their behaviors (Megargee, 2006). Contrary to these conjectures, the Hostile offenders of this study had clinical ratings similar to the WNL cluster. The Hostile cluster had the second highest attendance rate but the second lowest motivation to change score. Because of this, it could be that these offenders were only attending treatment because it was a mandatory part of their probation or parole requirements.

Motivational interviewing could also work to help this cluster of offenders through their ambivalence, though it may be a more difficult process for the therapist. It

has been proposed that using reflective listening[22] with hostile client during the motivational interviewing process can help him to engage in therapy but the process may need to be repeated several times before the client becomes receptive to it (Farbring & Johnson, 2008). For hostile offenders, it is speculated that their hostility is reflective of an underlying value system that is important to them but by which they are not living (Farbring & Johnson, 2008). Thus, reflective listening can help the therapist build rapport with the client through communicating to the client empathically that the therapist understands the frustration and anger that the client is feeling and describing the discrepancy between their values and behaviors which may be one possible source of their hostility. Consistency in this approach could result in the client being more willing to engage in conversations about specific plans to change, thereby aligning their behaviors with their value systems (Farbring & Johnson, 2008).

Manipulative. The Manipulative cluster may have behaviors involving the manipulation of situations or other individuals in order to meet a particular agenda (Megargee, 2006). Similar to the Hostile cluster, offenders in the Manipulative cluster may be dishonest, narcissistic, and superficially charming. They may also be impulsive, have a high self-esteem, and deny the seriousness of their actions (Megargee, 2006). Based on the patterns in their MMPI profiles, the Manipulative cluster may be a more severe offender than the WNL and Hostile offenders. Approximately half of these offenders are parents and they are the youngest of the clusters (along with the WNL cluster). It could be hypothesized the sex offenders in this cluster currently meet criteria for Antisocial Personality Disorder (ASPD). Their pathology indicates that they are

[22] Reflective listening involves communicating back to the client the information that he has conveyed to the therapist but in an empathic way and adding an interpretation to the client's statements (Arkowitz & Miller, 2008; Farbring & Johnson, 2008).

cunning, charming, defensive, and impulsive. Though giving a formal diagnosis based on this information alone is not possible, the types of factors which are associated with ASPD coincide with the characteristics of these offenders but not the other clusters (APA, 2000).

Clinically, engaging in treatment may be difficult for these individuals (Megargee, 2006). Sex offenders in this cluster tend to have difficulty accepting responsibility for their actions or appreciating the consequences of their behaviors. They sometimes are resistant to engaging in treatment or wanting to change because of their tendencies to scapegoat (Megargee, 2006). Consistent with these notions, the offenders in the Manipulative cluster had the lowest attendance rate but the second highest motivation to change score. Similar to the Hostile cluster, these behaviors are not congruent with their level of motivation. Because of their psychological profiles, it could be that these offenders were malingering and tried to impress the therapist with their level of motivation but were not genuine.

The use of motivational interviewing would be limited with this cluster of offenders. Because of the complexity of their psychopathology and use of manipulation, during motivational interviewing these offenders may appear to be more motivated than they actually are. They also may present as resistant rather than ambivalent, which is harder to overcome (Arkowitz & Miller, 208). When working with these types of clients, it has been suggested that tolerance of the resistance and consistent empathy may be the best method for intervention (Farbring & Johnson, 2008). Also, frequent assessments of the client's motivation and willingness to develop a specific plan for change may assist the therapist in understanding if the client is genuinely motivated or not (Farbring &

Johnson, 2008). However, if these offenders do not show improvement in motivation, then therapy may be less effective and it may be better for them to have a longer prison sentence.

Disturbed. The Disturbed cluster of offenders is the most severely pathological of the clusters and may be suspicious of others, impulsive, and difficult to manage (Megargee, 2006). They may also engage in violent acting out, lack empathy, and have troubles forming and maintaining emotional relationships. Of the four clusters, this is the only one to have clinically significant levels of depression and anxiety symptoms as well as agitation, feelings of worthlessness, and possibly suicidal thoughts or behaviors (Megargee, 2006).

Based on the information gathered in this study, the offenders in this cluster have the second highest rate of parenthood and are younger than the Manipulative offenders but older than the WNL and Hostile offenders. Because of the emotional component in their psychopathology profiles, it could be that this cluster of sex offenders represents those that are emotionally-driven. Hudson et al. (1999) described an emotional sex offender as part of their offense pathways model. These offenders had alternating cycles of excitement and guilt during the course of the offense process. Another possible explanation for these offenders is that they have a more serious psychological disorder, such as a thought disorder, which impairs their judgment and results in a number of emotional and behavioral problems

Clinically, the offenders in the Disturbed cluster may have difficulty engaging in treatment because of the severity of their symptoms (Megargee, 2006). In the present study, these offenders had an attendance rate higher than the Manipulative cluster but

lower than the other two clusters. These slightly lower rates of treatment attendance suggest that these offenders may have difficulty committing to the therapy process, perhaps because of severe psychopathology or because of a disingenuous interest in therapy. In terms of their motivation to change, these offenders had the highest motivation to change of all of the clusters. This high motivation could be due to the severity of psychological disturbances and their seeking symptom relief. If these offenders represented the emotionally-driven offenders which Hudson et al. (1999) described, then elevated motivation would be consistent with that presentation. However, because of their elevated F scale, it could also be the case that these offenders were manipulating the therapist in the same manner that the Manipulative cluster may have been.

Ambivalence and motivation may not be the problem for these offenders in terms of their clinical presentations and treatment responses; thus, motivational interviewing may not be the best technique to use with them (Farbring & Johnson, 2008). These offenders may need long-term, individual treatment which can target each of the behavioral and emotional problems that they are having. If the hypothesis that these offenders are committing sexual offenses because of their emotional disturbances, then targeting those problems in additional to the maladaptive sexual behaviors may be one possible way to reduce their recidivism rates. However, regardless of the content of treatment and the structure of the treatments, individualized, long-term therapy may be the key to helping these offenders stop offending. This therapy may need to take place in prison if the offenders cannot stop committing sexual offenses while in the community.

Summary. Though only partially validated, these clusters represent some of the possible ways in which psychopathology may vary in a sample of sex offenders and the effect that this variation can have on clinical variables. Further, the speculation about the types of treatments which may work with these offenders given their psychopathology and motivation to change underscores the variation in treatment planning which may need to take place if the goal of reducing recidivism rates even more is to be obtained. Future studies should investigate these possibilities.

Because these clusters are only partially validated, their application in clinical practice at this time would be premature. It may be that with further work, these clusters may be used as a general screen for sex offender psychopathology types when treatment begins. These psychopathology types may provide the clinician with an idea of the types of problems that the offenders may be struggling with and those which may affect their treatment prognosis. However, caution should be used when interpreting these cluster profiles because of their limited validation. Because motivation to change was different between two of these clusters, these psychological profiles may be used to help understand why an offender may have a certain level of motivation to change but should not be used as a substitute for directly measuring motivation to change. Furthermore, because motivation to change was a more robust predictor of treatment response than psychopathology (discussed below), these clusters cannot be used to predict treatment response or outcomes until further research has been conducted.

Motivation to Change as a Latent Construct

The third major finding for this study was that motivation to change was a latent construct in sex offenders. The present study was one of the first to empirically study the

construct of motivation to change in a sample of sex offenders. It has been postulated that there are four processes associated with motivation to change (i.e., Pre-Contemplation, Contemplation, Action, and Maintenance) and that each of these processes is associated with a different aspect in the change process (Prochaska et al., 1992). It has further been postulated that treatment responses may differ because of the level of motivation to change a client may have (Prochaska et al., 1992; Tierney & McCabe, 2005). However, in sex offenders, motivation to change has not been empirically tested as a latent construct nor has it been validated as a predictor of treatment responses. The present study empirically tested these two constructs.

Based on the results in this study, motivation to change was a latent construct with Pre-Contemplation, Contemplation, Action and Maintenance as its indicators. These results provided some insight into the processes that may be involved when a sex offender is trying to stop their offending behaviors. Sex offenders do not seem to move through distinct stages, based on these results. Rather there are parallel processes working within the sex offender and the extent to which an offender endorses the characteristics associated with a particular change process determines the extent of his motivation. This finding supports the theory that motivation is a continuous, oscillating process that involves many changes and relapses as one tries to end patterns of behavior. In order to know the utility of this construct, it was used to predict treatment responses. Results indicated that motivation was a significant predictor of treatment response when controlling for psychological characteristics at intake. Because of this finding, one may conclude that assessing motivation to change at the beginning of treatment may be able to provide useful information about how the offender will progress in treatment.

Results from this study also indicated that variations in the severity of psychopathology are related to variations in motivation to change, as evidenced by the significant differences between clusters on motivation to change and its components. Therefore, psychopathology may be one possible source of variation in sex offenders' motivation to change (though it was less so for the offense characteristics). These findings could mean that clinically addressing sex offenders' psychopathology in treatment in addition to their motivation to change could have significant (and potentially positive) effects on their motivation to change and, possibly, treatment responses. Future studies should consider testing the validity of this interpretation through examining a treatment response study in which motivation to change and psychopathology are both treated during the course of treatment.

Motivation to Change as a Predictor of Treatment Responses

The final main finding for this study regards the predictive capabilities of motivation to change and psychopathology. Results indicated that motivation to change was a more robust predictor of treatment response than was psychopathology. This result suggests that, even though some of the psychopathology clusters of this study significantly differed by motivation to change thereby suggesting a relationship between these two variables, motivation to change is the more important of the two when predicting treatment response. The treatment implications of this finding include using motivation interviewing or other enhancement techniques in order to increase the likelihood of a better treatment response. However, this finding does not indicate that psychopathology should be ignored when considering treatment responses. The cross-validation results which indicated that motivation differed by psychopathology type

implies psychopathology may have an influence on level of motivation to change. It could be the case that motivation is a moderator for psychopathology and, thus, utilizing the interaction between the two constructs may provide even more clinically meaningful information than examining them alone. The present study did not analyze this interaction and future research should consider exploring this element. Further, caution should still be taken in assessing the manner in which psychopathology may be affecting motivation to change and in ensuring that the motivation that the cluster types are endorsing is genuine. In doing so, the utility of using motivation to change to predict treatment response would be enhanced.

One finding which was unexpected was that motivation to change was not a predictor of the extent of change. That is, the degree to which an offender was ready to change did not determine the degree of change. This finding may suggest that other factors besides motivation to change are influencing the extent to which a sex offender changes in therapy. One possible factor could be characteristics of the therapist (e.g., empathy) which have been hypothesized as important to enhancing motivation and improving treatment prognosis in criminal populations (Farbring & Johnson, 2008). The finding that motivation to change does not predict the degree of change in therapy also highlights one of the limitations of the clinical application of motivation to change or the URICA measure. Future research should work toward examining other clinical variables which could be used in conjunction with motivation to change to predict the degree of therapeutic change.

Treatment Implications

Specific treatment implications have already been discussed per cluster type in the preceding section; thus, that information will not be repeated here. Rather, this section takes a step back. Broadly speaking, these results suggest that motivation to change is an important factor to consider during a sex offenders' rehabilitation process. Motivation to change has specific meaning for treatment responses and varies depending on the cluster of offenders being considered. Because of this variation in motivation to change across clusters, careful and repeated assessments of motivation to change may be necessary to ensure that the therapist is gathering accurate information about the client's current motivational profile. It may also be worth developing a clinician-rated motivation to change measure which can be used in addition to the self-report measure. Especially when considering the more manipulative sex offenders who may not be genuinely interested in change, taking multiple measures from multiple reporters may increase the viability of the results.

As discussed earlier, motivational interviewing may be worth considering as a pre-treatment for the traditional cognitive-behavioral treatment approach with sex offenders or as a technique to be incorporated into current cognitive-behavioral frameworks. It has been suggested that of all criminals, sex offenders are the ones who need and may best respond to motivational interviewing (Mann, 1996 as cited in Ginsburg et al., 2002). The results of this study suggest that motivation to change should be assessed and monitored during the treatment, thus motivational interviewing may be one way to accomplish that goal. However, if the training necessary to conduct motivational interviewing is not available, then objectively assessing motivation to

change through measures such as the URICA (or the modified URICA specific for sex offenders) may serve as an alternative solution.

Concerning psychopathology, based on these results, psychopathology types only add limited value to the understanding of treatment response and outcome in sex offenders. These types differ in treatment behaviors such as attendance and completion but these results are confounded by extrinsic motivating factors such as the consequences of not completing treatment (e.g., returning to prison). Also, psychopathology types were not predictive of treatment responses or the degree of clinical change. These results suggest that psychopathology types have limited direct clinical applicability regarding treatment responses. However, because these types differed significantly in their motivation to change, using psychopathology types in conjunction with motivation to change may be useful in treatment planning. That is, the psychopathology types may lend insight to the motivation of the offender which may then help in understanding that offenders' treatment prognosis. Thus, psychopathology types do not have universal or direct utility in understanding treatment behavior and response but the combination of psychopathology types and motivation to change may have more utility.

Limitations

Though the present study is a good start to the understanding of motivation to change in sex offenders and provides useful information as a starting point for other empirical studies in this area, there are some limitations. One of the most significant limitations in this study is the use of the substance abuse literature to conceptualize motivation to change. Because motivation to change has not been fully conceptualized in sex offenders, it was necessary to draw from other literature to gather an understanding of

this construct and how it may operate in this population. However, the actual parallels between substance abuse and sex offending are severely limited. Substance abuse often involves physiological dependence on a substance that mostly causes suffering to the substance abusers. However sex offending is not a physiologically-driven behavior and innocent victims, including children, are the ones who significantly suffer from the choices that sex offenders make. Because of the differences between these behaviors, it is also likely that the determinants of motivation to change may be different in these two classes of psychopathology. For example, substance abusers may be highly motivated to change but the physiological dependence on the substance makes that change difficult. On the other hand, some sex offenders' lack of motivation to change may be due to intrinsic motivations or belief systems related to the behavior (e.g., power seeking, rationalization that the behavior is harmless, etc). Thus, how motivation is conceptualized in each population has very distinct implications for enhancing that motivation and the behavioral or treatment responses which may be associated with that motivation. A key next step is to develop better measures of motivational indicators in sex offenders preparatory to treatment.

The use of archival data created a number of limitations in the study. First, it restricted which measures could be used in the analyses. If this study were to be replicated, it would have the strength of being able to choose measures that were specifically designed for sex offenders and, perhaps, will yield more significant results during the cross-validation process. Similarly, though the presence of the URICA in the intake battery was fortuitous, the URICA may not be the best measure of motivation to change, given its reliance on stages and processes of change which are difficult to

interpret. Had the data been directly collected from the offenders, then perhaps a better method could have been used, such as the inclusion of qualitative data to supplement the objective measure. Though sex offenders have a wide variety of motives and reasons to be honest or dishonest, a study assessing such an idiographic variable as motivation to change may be enriched with the inclusion of qualitative data which can supplement the quantitative measures. Lastly, because this data was taken from a treatment facility which was not involved in research, there was no rigorous control of the data collection procedures. Thus, the level of subjectivity and bias introduced in the data during the collection procedures may have affected the amount of error present in the results.

In relation to the measurement problems, another limitation of this study is the lack of a true measure of treatment outcome in terms of real world behavior over time (i.e., recidivism). One of the implications of this study is that using the clusters may provide information about treatment prognosis but without a measure of recidivism, the full utility of these clusters is unknown. The use of treatment response in the present study provided a starting point for understanding the clinical utility of clustering psychopathology but further research is necessary to continue moving the field forward. Future research should consider using a longitudinal method which would involve using these clusters of psychopathology to predict recidivism rates.

Another limitation of this study was the sensitivity of the cluster analyses to the validity of the MMPI. Having to remove several of the offenders because of potential invalidity decreased the sample size and power to detect effects, though it did not seem to alter the results. Because those offenders represented even greater heterogeneity in this

sample, keeping them in the analyses may have yielded even more interesting results about the psychopathology profiles in sex offenders.

Statistically, the effect sizes for some of the results were small based on Cohen's definition (i.e., beta less than .30). However, small effect sizes are not necessarily clinically unimportant (Kendall, Flannery-Schroeder, & Ford, 1999). Though the effect sizes of this study were small in terms of group means, they could have clinical significance in terms of individual outcomes, as can often happen in health-related research (Kendall et al., 1999). For example, the SEM model testing motivation to change as a latent construct had an r of .21 for motivation predicting treatment response. According to the binomial effect size for display (BESD; Rosenthal & Rubin, 1982), which translates the correlation into a proportion of cases leading to change, the r of .21 would be associated with an increase in treatment success from approximately 25% to 75% (Rosenthal & Rubin, 1982). Thus, the potential prediction of treatment success may be viewed as clinically significant.

A final limitation regards the number of variables included in the study. Cross-validating such a large number of offense characteristics and treatment variables produced the possibility for an increase in Type I errors. However, one benefit of having included a variety of variables is that this study has potentially eliminated variables which are less likely to differ between clusters and narrowed the scope on which variables are important to attend to in research and treatment.

Future Research Directions

Future research can focus on understanding the role that motivation to change may have in sex offenders. One finding which emerged from this study is that

psychopathology (as measured by the MMPI) and motivation to change are not highly correlated (see *post-hoc* analyses in Appendix L). Therefore, future research may want to focus on a wide variety of factors which may be related to motivation to change (e.g., denial, cognitive distortions) with the goal of understanding the offender characteristics which may be driving motivation. If these factors can be identified then perhaps treatment can be targeted toward these specific factors and become even more specialized for sex offenders.

Similarly, future research can also consider continuing to explore the connection these findings may have in other bodies of literature, such as the personality literature. For example, characteristics of the Hostile cluster parallel findings in the temperament and personality literature which suggest that affiliation/hostility are basic dimensions of human personality. Perhaps these clusters represent higher order personality traits that were not captured in the MMPI but could also have significant clinical implications.

A final future research direction regards the measure for motivation to change. The URICA was used in the present study and was a valid measure. However, if a larger sample size were used, a second-order factor analyses including the scale items may be worth analyzing to ensure that the URICA subscales and motivation to change are latent constructs. Also, the modified version of the URICA which as specially designed for sex offenders needs empirical validation. Having this measure available in professional settings would ensure that sex offenders are considering their sexual offending when they answer questions about changing their behaviors.

Conclusions

Sex offending is a problem in society that many researchers have been trying to address and reduce recidivism. However, one of the problems with studying sexual offenders and treatment responses is that the varied outcomes which are apparent in the results and inability to take those varied outcomes and develop one solution to the problem. The present study therefore sought to study the variation in sex offenders, focusing on psychopathology, to examine if this variation has implications for treatment attitudes and behaviors. The results indicated that psychopathology may be one source of variation in treatment attitudes such as motivation to change as well as treatment responses. The current study has attempted to empirically test a new perspective in understanding sex offenders and their treatment responses. Taking the suggestions for future research, if other researchers continue in this train of understanding motivation to change, then perhaps the sex offender treatment literature can continue to develop.

APPENDIX A

Tables for Statistical Results

Table 1. Reliability Statistics for All Variables in the Dataset.

Variable	No. of Raters	N	Reliability Statistic (ICC)[1]	Reliability Statistic (ICC)[2]	Percent Correct (Rater A)[3]	Percent Correct (Rater B)[3]
Race[a]	2	19	0.89	1.00	100	100
Education[a]	2	20	0.73	0.93	100	100
Marital Status[a]	2	20	--	1.00	100	100
No. of Children	2	19	0.99	0.99	100	80
Employed[a]	2	19	1.00	1.00	100	80
Offense Type[a]	2	19	0.92	1.00	80	80
Penetration[a]	2	20	0.80	1.00	80	80
Alcohol at Offense[a]	2	20	0.88	1.00	100	80
Drugs at Offense[a]	2	19	1.00	1.00	100	100
Victim Status[a]	2	20	1.00	1.00	100	100
Victim Gender[a]	2	20	(all female)	(all female)	100	100
Victim Age	2	17	0.97	1.00	80	80
Relationship to Victim[a]	2	20	--	0.93	100	80
Supervision Status[a]	2	15	1.00	1.00	100	80
Months in Prison	2	16	1.00	1.00	80	100
Any Prior Offenses[a]	2	14	1.00	1.00	100	100
Juvenile Record[a]	2	12	1.00	1.00	100	100
Attendance Record	2	20	0.99	1.00	100	100
Requirements Complete[a]	2	20	1.00	1.00	100	100
Pre-Psychopathology	2	15	1.00	1.00	100	80
Pre-Maturity	2	18	0.99	1.00	100	100
Pre-Risk	2	16	0.98	1.00	100	100
Pre-Denial	2	18	0.99	1.00	100	100
Pre-Impulsivity	2	17	1.00	1.00	100	100
Post-Psychopathology	2	17	1.00	1.00	100	100
Post-Maturity	2	17	1.00	1.00	100	100
Post-Risk	2	17	1.00	1.00	100	100
Post-Denial	2	17	1.00	1.00	100	100
Post-Impulsivity	2	17	1.00	1.00	100	100
URICA 1	2	18	1.00	1.00	100	100
URICA 2	2	18	1.00	1.00	100	100
URICA 3	2	18	0.99	1.00	100	100
URICA 4	2	18	1.00	1.00	100	100
URICA 5	2	17	1.00	1.00	100	100

[a] = Kappa statistic

[1] = Before retraining of raters

[2] = After retraining of raters

[3] = Percent correct of raters after the retraining.

Table 1 (cont'd).

Variable	No. of Raters	N	Reliability Statistic (ICC)[1]	Reliability Statistic (ICC)[2]	Percent Correct (Rater A)[3]	Percent Correct (Rater B)[3]
URICA 6	2	18	1.00	1.00	100	100
URICA 7	2	18	1.00	1.00	100	100
URICA 8	2	18	0.99	1.00	100	100
URICA 9	2	18	1.00	1.00	100	100
URICA 10	2	18	1.00	1.00	100	100
URICA 11	2	17	1.00	1.00	100	100
URICA 12	2	18	1.00	1.00	100	100
URICA 13	2	17	1.00	1.00	100	100
URICA 14	2	18	1.00	1.00	100	100
URICA 15	2	18	0.99	1.00	100	100
URICA 16	2	18	1.00	1.00	100	100
URICA 17	2	18	1.00	1.00	100	100
URICA 18	2	18	1.00	1.00	100	100
URICA 19	2	18	1.00	1.00	100	100
URICA 20	2	16	1.00	1.00	100	100
URICA 21	2	18	1.00	1.00	100	100
URICA 22	2	18	1.00	1.00	100	100
URICA 23	2	17	1.00	1.00	100	100
URICA 24	2	18	1.00	1.00	100	100
URICA 25	2	18	1.00	1.00	100	100
URICA 26	2	18	0.99	1.00	100	100
URICA 27	2	18	0.99	1.00	100	100
URICA 28	2	18	1.00	1.00	100	100
URICA 29	2	18	1.00	1.00	100	100
URICA 30	2	18	1.00	1.00	100	100
URICA 31	2	17	1.00	1.00	100	100
URICA 32	2	18	1.00	1.00	100	100
MMPI F	2	20	1.00	1.00	1.00	1.00
MMPI L	2	20	1.00	1.00	1.00	1.00
MMPI K	2	20	1.00	1.00	1.00	1.00
MMPI Hs	2	20	1.00	1.00	1.00	1.00
MMPI D	2	20	1.00	1.00	1.00	1.00
MMPI Hy	2	20	1.00	1.00	1.00	1.00
MMPI Pd	2	20	1.00	1.00	1.00	1.00
MMPI Mf	2	20	1.00	1.00	1.00	1.00
MMPI Pa	2	20	1.00	1.00	1.00	1.00
MMPI Pt	2	20	1.00	1.00	1.00	1.00
MMPI Sc	2	20	1.00	1.00	1.00	1.00
MMPI Ma	2	20	1.00	1.00	1.00	1.00
MMPI Si	2	20	1.00	1.00	1.00	1.00

[1] = Before retraining of raters

[2] = After retraining of raters

[3] = Percent correct of raters after the retraining.

Table 2. Descriptive Statistics: All Variables (Before Imputation).

Variable	Sample N (max=274)	Percent Missing	Min.	Max.	Mean (Std Dev)	Skew (Std Err)	Kurtosis (Std Err)
Age	261	4.74	17.81	76.76	34.31 (12.07)	0.81 (0.15)	0.60 (0.30)
Race	266	2.92	1.00	6.00	1.42 (0.92)	3.01 (0.15)	10.62 (0.29)
Education	265	3.28	1.00	9.00	4.23 (1.31)	0.65 (0.15)	0.86 (0.29)
Marital Status	257	6.20	1.00	4.00	1.72 (0.87)	0.60 (0.16)	-1.31 (0.30)
No. of Children	271	1.09	0.00	8.00	1.46 (1.62)	1.19 (0.15)	1.36 (0.29)
Employed	274	0.00	0.00	1.00	0.56 (0.49)	-0.25 (0.15)	-1.95 (0.29)
Offense Type	272	0.73	1.00	4.00	3.06 (0.98)	-0.53 (0.15)	-1.02 (0.29)
Penetration	273	0.36	0.00	1.00	0.60 (0.49)	-0.43 (0.15)	-1.83 (0.29)
Alcohol at Offense	272	0.73	0.00	1.00	0.36 (0.48)	0.59 (0.15)	-1.67 (0.29)
Drugs at Offense	270	1.46	0.00	1.00	0.21 (0.41)	1.39 (0.15)	-0.05 (0.29)
Victim Status	259	5.47	1.00	2.00	1.19 (0.39)	1.57 (0.15)	0.55 (0.30)
Victim Gender	269	1.82	1.00	2.00	1.94 (0.24)	-3.61 (0.15)	11.12 (0.29)
Victim Age	236	13.87	3.00	65.00	13.81 (6.79)	3.01 (0.16)	16.82 (0.32)
Relation to Victim	270	1.46	1.00	6.00	3.66 (1.74)	-0.06 (0.15)	-1.38 (0.29)
Supervision Status	265	3.28	1.00	2.00	1.37 (0.48)	0.53 (0.15)	-1.72 (0.30)
Months in Prison	259	5.47	0.00	252.00	29.57 (42.65)	2.10 (0.15)	4.98 (0.30)
Prior Offenses	250	8.76	0.00	1.00	0.64 (0.48)	-0.58 (0.16)	-1.67 (0.31)
Juvenile Record	245	10.58	0.00	1.00	0.23 (0.42)	1.27 (0.16)	-0.38 (0.31)
Attendance Record	271	1.09	0.00	47.00	23.93 (8.53)	-1.43 (0.15)	1.49 (0.30)
Requirements Complete	273	0.36	0.00	1.00	0.76 (0.43)	-1.24 (0.15)	-0.47 (0.29)
Pre-Psychopathology	240	12.41	1.00	7.00	3.09 (1.11)	0.85 (0.16)	0.57 (0.32)
Pre-Maturity	244	10.95	4.00	9.00	6.51 (0.91)	0.12 (0.16)	0.10 (0.31)
Pre-Risk	238	13.14	1.00	6.00	2.61 (0.93)	0.44 (0.16)	0.23 (0.31)
Pre-Denial	242	11.67	1.00	10.00	3.29 (1.60)	1.22 (0.16)	2.29 (0.31)
Pre-Impulsivity	241	12.04	2.00	8.00	3.91 (1.18)	0.78 (0.16)	0.72 (0.31)
Post-Psychopathology	205	25.18	1.00	7.00	2.83 (1.16)	0.91 (0.17)	1.48 (0.34)

Table 2 (cont'd).

Variable	Sample N (max=274)	Percent Missing	Min.	Max.	Mean (Std Dev)	Skew (Std Err)	Kurtosis (Std Err)
Post-Maturity	206	24.82	4.00	8.00	5.65 (0.96)	0.18 (0.17)	-0.28 (0.34)
Post-Risk	206	24.82	1.00	4.00	1.96 (0.84)	0.59 (0.17)	-0.21 (0.34)
Post-Denial	206	24.82	1.00	9.00	2.69 (1.75)	1.65 (0.17)	2.57 (0.34)
Post-Impulsivity	206	24.82	1.00	7.00	3.42 (1.03)	0.65 (0.17)	0.47 (0.34)
URICA 1	262	4.38	1.00	5.00	2.93 (1.33)	0.11 (0.15)	-1.24 (0.31)
URICA 2	265	3.28	1.00	5.00	3.96 (1.03)	-1.24 (0.15)	1.28 (0.30)
URICA 3	264	3.65	1.00	5.00	4.00 (0.99)	-1.43 (0.15)	2.16 (0.30)
URICA 4	261	4.74	1.00	5.00	3.89 (1.09)	-1.06 (0.15)	0.61 (0.31)
URICA 5	260	5.11	1.00	5.00	2.49 (1.24)	0.57 (0.15)	-0.61 (0.31)
URICA 6	265	3.28	1.00	5.00	2.60 (1.45)	0.38 (0.15)	-1.28 (0.30)
URICA 7	262	4.38	1.00	5.00	3.70 (1.06)	-0.96 (0.15)	0.51 (0.31)
URICA 8	264	3.65	1.00	5.00	3.79 (1.03)	-1.09 (0.15)	0.91 (0.30)
URICA 9	261	4.74	1.00	5.00	2.66 (1.23)	0.41 (0.15)	-0.83 (0.31)
URICA 10	261	4.74	1.00	5.00	2.95 (1.29)	-0.09 (0.15)	-1.26 (0.31)
URICA 11	260	5.11	1.00	5.00	2.33 (1.16)	0.76 (0.15)	-0.16 (0.31)
URICA 12	260	5.11	1.00	5.00	3.86 (0.98)	-0.88 (0.15)	0.65 (0.31)
URICA 13	258	5.83	1.00	5.00	2.46 (1.16)	0.72 (0.16)	-0.27 (0.31)
URICA 14	264	3.65	1.00	5.00	4.06 (0.95)	-1.24 (0.15)	1.50 (0.30)
URICA 15	262	4.38	1.00	5.00	3.43 (1.16)	-0.52 (0.15)	-0.52 (0.31)
URICA 16	260	5.11	1.00	5.00	2.55 (1.22)	0.50 (0.15)	-0.76 (0.31)
URICA 17	262	4.38	1.00	5.00	3.56 (1.16)	-0.81 (0.15)	-0.24 (0.31)
URICA 18	260	5.11	1.00	5.00	2.52 (1.23)	0.39 (0.15)	-0.86 (0.31)
URICA 19	258	5.83	1.00	5.00	3.19 (1.22)	-0.29 (0.16)	-0.89 (0.31)
URICA 20	257	6.20	1.00	5.00	3.39 (1.16)	-0.53 (0.16)	-0.55 (0.31)
URICA 21	260	5.11	1.00	5.00	3.57 (1.01)	-0.79 (0.15)	0.39 (0.31)
URICA 22	257	6.20	1.00	5.00	3.25 (1.19)	-0.30 (0.16)	-0.88 (0.31)

Table 2 (cont'd).

Variable	Sample N (max=274)	Percent Missing	Min.	Max.	Mean (Std Dev)	Skew (Std Err)	Kurtosis (Std Err)
URICA 23	259	5.47	1.00	5.00	2.43 (1.17)	0.55 (0.15)	-0.60 (0.31)
URICA 24	260	5.11	1.00	5.00	4.04 (0.83)	-1.26 (0.15)	2.62 (0.31)
URICA 25	258	5.83	1.00	5.00	4.13 (0.89)	-1.41 (0.16)	2.75 (0.31)
URICA 26	257	6.20	1.00	5.00	2.02 (1.03)	1.08 (0.16)	0.89 (0.31)
URICA 27	260	5.11	1.00	5.00	3.52 (1.31)	-0.58 (0.15)	-0.83 (0.83)
URICA 28	258	5.83	1.00	5.00	2.03 (1.01)	1.05 (0.15)	0.79 (0.31)
URICA 29	257	6.20	1.00	5.00	2.28 (1.07)	0.73 (0.16)	-0.16 (0.31)
URICA 30	258	5.83	1.00	5.00	3.98 (0.89)	-1.38 (0.16)	2.61 (0.31)
URICA 31	257	6.20	1.00	5.00	2.02 (1.01)	1.04 (0.16)	0.71 (0.31)
URICA 32	258	5.83	1.00	5.00	2.71 (1.23)	0.17 (0.15)	-1.01 (0.31)
Pre-Contem-plation	266	2.92	1.00	4.43	2.38 (0.73)	0.29 (0.15)	-0.41 (0.29)
Contem-plation	266	2.92	1.25	5.00	3.72 (0.77)	-0.59 (0.15)	0.37 (0.29)
Action	266	2.92	1.13	5.00	3.72 (0.69)	-0.95 (0.15)	1.57 (0.29)
Mainte-nance	266	2.92	1.00	5.00	2.73 (0.89)	0.19 (0.15)	-0.43 (0.29)
MMPI F	274	0.00	36.00	120.00	65.29 (20.10)	0.92 (0.15)	0.06 (0.29)
MMPI L	274	0.00	34.00	91.00	62.23 (11.69)	0.23 (0.15)	-0.28 (0.29)
MMPI K	274	0.00	30.00	87.00	55.22 (10.20)	-0.20 (0.15)	-0.41 (0.29)
MMPI Hs	274	0.00	30.00	110.00	59.30 (12.14)	0.41 (0.15)	0.60 (0.29)
MMPI D	274	0.00	34.00	104.00	57.38 (11.07)	0.46 (0.15)	0.76 (0.29)
MMPI Hy	274	0.00	31.00	116.00	57.91 (11.76)	0.64 (0.15)	1.50 (0.29)
MMPI Pd	274	0.00	39.00	105.00	65.05 (11.22)	0.35 (0.15)	0.00 (0.29)
MMPI Mf	274	0.00	30.00	84.00	47.94 (8.86)	0.45 (0.15)	0.53 (0.29)
MMPI Pa	274	0.00	31.00	119.00	63.23 (14.12)	0.60 (0.15)	0.44 (0.29)
MMPI Pt	274	0.00	34.00	104.00	57.90 (12.53)	0.69 (0.15)	0.28 (0.29)
MMPI Sc	274	0.00	34.00	120.00	63.97 (16.10)	0.81 (0.15)	0.33 (0.29)
MMPI Ma	274	0.00	35.00	101.00	54.20 (10.88)	1.09 (0.15)	1.64 (0.29)
MMPI Si	274	0.00	32.00	81.00	52.64 (9.25)	0.26 (0.15)	-0.05 (0.29)

Table 3. Distribution of Categorical Variables.

Variable	Sample N (max=274)	Percent of Total Sample
Race		
Caucasian	200	72.99
African-American	38	13.87
Hispanic	21	7.66
Other	7	2.55
Education		
Elementary	3	1.09
Junior High	9	3.28
Some High School	67	24.45
H.S. Degree	94	34.31
GED	46	16.79
Some college	36	13.14
Associate's degree	3	1.09
Bachelor's degree	6	2.19
More than BA/BS	1	0.36
Marital Status		
Single	142	51.82
Married	46	16.79
Div/Sep/Wid	69	25.18
Employed		
No	120	43.79
Yes	154	56.20
Offense Type		
CSC 1	17	6.20
CSC 2	71	25.91
CSC 3	62	22.63
CSC 4	122	44.53
Penetration		
No	108	39.42
Yes	165	60.22

Variable	Sample N (max=274)	Percent of Total Sample
Alcohol at Offense		
No	174	63.50
Yes	98	35.77
Drugs at Offense		
No	212	77.37
Yes	58	21.17
Victim Status		
Child	210	76.64
Adult	49	17.88
Victim Gender		
Male	17	6.20
Female	252	91.97
Relationship to Victim		
Romantic Partner	34	12.41
Non-romantic Partner	58	21.17
Stepchild	34	12.41
Stranger	40	14.59
Biological Relative	47	17.15
Other	57	20.80
Supervision Status		
Probation	166	60.58
Parole	99	36.13
Any Prior Offenses		
No	90	32.85
Yes	160	58.39
Juvenile Record		
No	188	68.61
Yes	57	20.80
Requirement Complete		
No	65	23.72
Yes	208	75.91

Table 4a. Inter-Correlations of Offense Characteristics.

	Age	Offense Type	Penetra-tion	Alcohol at Offense	Drugs at Offense	Victim Status	Victim Gender	Victim Age	Relation to Victim	Supervise Status	Mos. in Prison	Any Prior Offense	Juvenile Record
Age	--												
Offense Type	-0.06	--											
Penetra-tion	-0.15*	-0.08	--										
Alcohol at Offense	-0.05	0.01	0.04	--									
Drugs at Offense	-0.11	-0.08	0.12*	0.27**	--								
Victim Status	0.09	0.18**	0.03	0.19**	-0.05	--							
Victim Gender	-0.10	0.02	0.07	0.07	0.03	0.01	--						
Victim Age	0.20**	0.26**	0.16*	0.09	-0.05	0.66**	0.09	--					
Relation to Victim	0.16**	-0.12*	-0.20**	0.08	0.02	-0.25**	-0.14*	-0.19**	--				
Supervise Status	0.11	-0.32**	0.24**	0.14*	0.15*	-0.06	0.01	-0.09	-0.00	--			
Mos. in Prison	0.22**	-0.33**	0.16*	0.11	0.12	0.02	-0.02	-0.04	0.07	0.74**	--		
Any Prior Offense	-0.01	-0.01	0.12	0.18**	0.23**	-0.02	0.16*	-0.02	-0.04	0.24**	0.17**	--	
Juvenile Record	-0.24**	0.06	0.06	0.07	0.17**	-0.00	0.10	-0.04	-0.08	0.07	0.08	0.34**	--

*. Correlations significant at 0.05 level.

**. Correlations significant at 0.01 level.

Table 4b. Correlations between URICA Subscales and Offense Characteristics.

	Pre-Contemplation	Contemplation	Action	Maintenance
Age	-0.08	0.05	0.07	0.16*
Offense Type	0.25**	-0.18**	-0.18**	-0.16*
Penetration	-0.10	0.05	0.05	-0.02
Alcohol at Offense	-0.17**	0.12*	0.17**	0.15*
Drugs at Offense	-0.12	0.12	0.14*	0.13*
Victim Status	0.09	-0.13*	-0.11	-0.10
Victim Gender	0.03	-0.07	-0.02	-0.08
Victim Age	0.17*	-0.24**	-0.19**	-0.14*
Relationship to Victim	-0.13*	0.18**	0.15*	0.21**
Supervision Status	-0.50**	0.36**	0.39**	0.34**
Months in Prison	-0.38**	0.24**	0.30**	0.27**
Any Prior Offenses	-0.02	0.12	0.17**	0.19**
Juvenile Record	0.08	-0.09	-0.08	-0.04

*. Correlations significant at 0.05 level.
**. Correlations significant at 0.01 level.

Table 4c. Correlations between MMPI Scales and Offense Characteristics.

	F	L	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si
Age	-0.09	-0.02	0.06	0.17**	0.14*	0.25**	-0.05	0.19**	0.06	0.04	-0.03	-0.20**	0.04
Offense Type	0.00	-0.01	0.11	0.05	-0.07	0.04	-0.01	-0.06	0.02	0.01	0.04	0.06	-0.08
Penetration	-0.01	0.07	0.03	0.06	-0.00	-0.01	0.02	-0.07	-0.02	-0.03	0.00	0.04	-0.02
Alcohol at Offense	-0.02	-0.04	-0.11	-0.06	-0.03	0.00	0.13*	0.06	0.01	0.03	-0.03	0.04	-0.02
Drugs at Offense	0.11	-0.15*	-0.21**	0.14*	0.02	-0.14*	0.18*	-0.04	0.07	0.12	0.14*	0.19**	0.09
Victim Status	0.01	0.02	0.08	0.09	-0.07	0.03	0.01	-0.02	0.04	-0.02	0.03	-0.01	-0.11
Victim Gender	0.03	0.08	0.05	-0.09	-0.17**	-0.09	0.04	-0.11	-0.09	-0.12*	-0.02	0.08	-0.13*
Victim Age	-0.01	0.09	0.07	0.03	-0.04	0.04	-0.00	-0.03	0.03	-0.01	0.01	-0.01	-0.06
Relationship to Victim	-0.02	-0.05	-0.05	0.05	0.12*	0.02	-0.02	0.11	-0.03	0.03	-0.03	-0.10	0.08
Supervision Status	-0.09	0.06	0.08	-0.05	0.04	0.02	0.14*	0.04	-0.18*	-0.08	-0.08	-0.06	-0.01
Months in Prison	-0.13*	-0.05	-0.05	-0.09	0.02	-0.04	0.08	0.05	-0.10	-0.09	-0.08	-0.07	0.05
Any Prior Offenses	0.08	-0.09	-0.22**	-0.04	-0.01	-0.05	0.19**	-0.03	0.04	0.03	0.04	0.13*	0.02
Juvenile Record	0.04	-0.09	-0.15*	-0.08	-0.02	-0.09	0.14*	-0.12	-0.05	0.01	-0.03	0.17**	0.01

*. Correlations significant at 0.05 level.

**. Correlations significant at 0.01 level.

Table 5a. Inter-correlations of Clinical Variables.

	Attend Record	Reqs Complete	Pre-Psycho-pathology	Pre-Mature	Pre-Risk	Pre-Impulse	Pre-Denial	Post-Psycho-pathology	Post-Mature	Post-Risk	Post-Impulse	Post-Denial
Attend Record	--											
Reqs Complete	0.73**	--										
Pre-Psycho-pathology	-0.19**	-0.11	--									
Pre-Mature	-0.27**	-0.33**	0.41**	--								
Pre-Risk	-0.18**	-0.12	0.33**	0.37**	--							
Pre-Impulse	-0.29**	-0.24**	0.53**	0.57**	0.51**	--						
Pre-Denial	-0.19**	-0.11	0.28**	0.30**	0.29**	0.30**	--					
Post-Psycho-pathology	0.03	--[a]	0.32**	0.17*	0.22**	0.24**	0.17*	--				
Post-Mature	-0.06	--[a]	0.14	0.49**	0.23**	0.35**	0.20**	0.43**	--			
Post-Risk	-0.03	--[a]	0.26**	0.27**	0.14	0.23**	0.04	0.45**	0.44**	--		
Post-Impulse	-0.04	--[a]	0.29**	0.33**	0.18*	0.40**	0.08	0.50**	0.65**	0.51**	--	
Post-Denial	-0.12	--[a]	0.18*	0.19**	0.13	0.21**	0.54**	0.28**	0.35**	0.28**	0.22**	--

*. Correlations significant at 0.05 level.

**. Correlations significant at 0.01 level.

[a]. Correlation could not be computed because "Requirements Complete" is mostly constant.

Table 5b. Correlations between Clinical Variables and Offense Characteristics.

	Attend Record	Reqs. Complete	Pre-Psycho-pathology	Pre-Mature	Pre-Risk	Pre-Impulse	Pre-Denial	Post-Psycho-pathology	Post-Mature	Post-Risk	Post-Impulse	Post-Denial
Offense Type	-0.15*	-0.10	0.11	0.15*	-0.07	0.14*	0.08	-0.10	0.08	0.14*	0.01	0.08
Penetration	0.07	0.07	-0.04	0.00	0.04	004.	-0.05	-0.07	-0.03	0.00	-0.06	-0.18*
Alcohol at Offense	0.04	-0.00	-0.01	-0.02	-0.04	-0.01	-0.09	0.01	-0.07	0.03	0.04	-0.19**
Drugs at Offense	-0.04	-0.11	-0.00	0.04	0.11	0.17*	-0.09	0.15*	0.08	0.05	0.10	-0.17*
Victim Status	-0.02	0.02	-0.07	-0.09	-0.04	0.01	0.02	-0.13	-0.06	-0.09	-0.08	-0.01
Victim Gender	0.00	-0.02	-0.03	0.02	-0.12	-0.04	-0.05	-0.04	0.02	0.00	0.04	-0.04
Victim Age	-0.02	-0.03	-0.14*	-0.14*	-0.16	-0.05	0.02	-0.16*	-0.11	-0.04	-0.13	0.04
Relationship to Victim	-0.02	0.02	-0.06	-0.10	0.02	-0.06	-0.01	0.03	-0.13	-0.09	-0.07	-0.09
Supervision Status	-0.03	-0.10	-0.05	-0.12	0.02	-0.09	-0.36**	-0.01	-0.30**	-0.09	-0.15*	-0.41**
Prison Time	0.09	0.06	-0.05	-0.19**	0.04	-0.11	-0.28**	0.04	-0.26**	-0.07	-0.14	-0.29**
Any Prior Offenses	-0.13	-0.16	0.03	0.01	0.05	0.10	-0.07	0.15*	-0.00	0.12	0.13	-0.06
Juvenile Record	-0.20**	-0.22**	0.05	0.11	0.04	0.13	-0.05	-0.02	0.10	0.09	0.15*	0.10

*. Correlations significant at 0.05 level.
**. Correlations significant at 0.01 level.

Table 5c. Correlations between URICA Subscales and Clinical Variables.

	Pre-Contemplation	Contemplation	Action	Maintenance
Attendance Record	0.02	-0.07	-0.06	-0.06
Requirement Complete	0.02	-0.07	-0.05	-0.08
Pre-Psychopathology	-0.07	0.05	0.08	0.10
Pre-Maturity	0.13	-0.06	-0.05	0.01
Pre-Risk	-0.05	0.03	0.01	0.08
Pre-Impulsivity	0.04	0.03	0.08	0.02
Pre-Denial	0.36**	-0.27**	-0.31**	-0.17*
Post-Psychopathology	-0.07	0.22**	0.24**	0.18*
Post-Maturity	0.23**	-0.12	-0.06	-0.13
Post-Risk	-0.02	0.07	0.10	0.07
Post-Impulsivity	0.06	0.11	0.11	0.03
Post-Denial	0.54**	-0.30**	-0.33**	-0.26**

*. Correlations significant at 0.05 level.

**. Correlations significant at 0.01 level.

Table 5d. Correlations between MMPI Scales and Clinical Variables.

	F	L	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si
Attendance Record	-0.11	-0.04	0.07	-0.07	-0.10	-0.05	-0.14*	-0.10	-0.01	-0.07	-0.13*	-0.05	-0.14**
Requirements Complete	-0.18**	-0.01	0.10	-0.08	-0.11	-0.06	-0.15*	-0.06	-0.04	-0.11	-0.16*	-0.15*	-0.10
Pre-Psycho-pathology	0.10	0.02	-0.01	0.14*	0.13	0.13*	0.07	0.04	0.09	0.08	0.11	0.07	0.16*
Pre-Maturity	0.21**	-0.04	-0.07	0.15*	0.14*	0.07	0.15*	-0.09	0.11	0.15*	0.23**	0.19**	0.14*
Pre-Risk	-0.04	-0.03	-0.02	0.11	0.08	0.10	0.10	0.08	0.10	0.04	0.00	0.01	0.04
Pre-Impulsivity	0.11	-0.04	-0.07	0.19**	0.15*	0.09	0.11	-0.07	0.21**	0.16*	0.18**	0.10	0.11
Pre-Denial	0.12	-0.01	-0.06	0.16*	0.08	0.11	-0.05	0.10	0.17**	0.11	0.15*	0.10	0.09
Post-Psycho-pathology	0.19**	0.06	-0.21**	0.14*	0.30**	0.18*	0.25**	0.13	0.19**	0.20**	0.20**	0.11	0.23**
Post-Maturity	0.19**	0.08	-0.12	0.05	0.01	-0.02	0.11	-0.18*	0.04	0.01	0.10	0.19**	0.06
Post-Risk	0.13	0.09	-0.15*	0.06	0.06	0.09	0.08	-0.01	0.09	0.03	0.09	0.10	0.03
Post-Impulsivity	0.23**	0.06	-0.22**	0.00	0.08	-0.06	0.16*	-0.02	0.10	0.04	0.10	0.12	0.08
Post-Denial	-0.04	0.19**	0.06	0.16*	0.06	0.12	-0.12	-0.07	-0.04	-0.05	-0.06	-0.08	-0.01

*. Correlations significant at 0.05 level.

**. Correlations significant at 0.01 level.

Table 6a. Inter-Correlations of URICA Subscales.

	Pre-Contemplation	Contemplation	Action	Maintenance
Pre-Contemplation	--			
Contemplation	-0.62**	--		
Action	-0.54**	0.76**	--	
Maintenance	-0.46**	0.72**	0.57**	--

*. Correlations significant at 0.05 level.

**. Correlations significant at 0.01 level.

Table 6b. Inter-Correlations of MMPI Scales.

	F	L	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si
F	--												
L	-0.11	--											
K	-0.30**	0.41**	--										
Hs	0.42**	0.12	0.16**	--									
D	0.41**	0.05	-0.11	0.61**	--								
Hy	0.24**	0.15	0.24**	0.78**	0.56**	--							
Pd	0.40**	-0.17**	-0.09	0.30**	0.42**	0.35**	--						
Mf	0.14*	-0.07	-0.09	0.11	0.16**	0.20**	0.09	--					
Pa	0.65**	-0.17**	-0.24**	0.40**	0.46**	0.31**	0.44**	0.29**	--				
Pt	0.63**	-0.16**	-0.12*	0.54**	0.65**	0.43**	0.46**	0.17**	0.67**	--			
Sc	0.82**	-0.11	-0.14*	0.55**	0.52**	0.39**	0.50**	0.15*	0.70**	0.79**	--		
Ma	0.41**	-0.23**	-0.39**	0.02	-0.03	-0.08	0.32**	-0.04	0.23**	0.23**	0.40**	--	
Si	0.48**	-0.07	-0.40**	0.28**	0.59**	0.12	0.25**	0.15*	0.42**	0.55**	0.51**	0.07	--

*. Correlations significant at 0.05 level.

**. Correlations significant at 0.01 level.

Table 6c. Correlations between URICA Subscales and MMPI Scales.

	Pre-Contemplation	Contemplation	Action	Maintenance
MMPI F	0.15*	0.02	0.01	0.12*
MMPI L	0.08	-0.08	0.04	-0.11
MMPI K	-0.02	-0.13*	-0.09	0.14*
MMPI Hs	0.09	0.03	0.02	0.05
MMPI D	0.02	0.13*	0.12	0.15*
MMPI Hy	-0.01	0.01	0.04	-0.02
MMPI Pd	-0.09	0.12*	0.09	0.12*
MMPI Mf	-0.17**	0.15*	0.18**	0.12*
MMPI Pa	0.13*	0.04	0.03	0.07
MMPI Pt	0.07	0.10	0.02	-0.14*
MMPI Sc	0.11	0.07	0.01	0.11
MMPI Ma	0.10	0.00	-0.04	-0.04
MMPI Si	-0.04	0.19**	0.12*	0.25**

*. Correlations significant at 0.05 level.

**. Correlations significant at 0.01 level.

Table 7. Scale Reliability Statistics for URICA.

	N	Scale Items	Alpha
Pre-Contemplation	234	8	0.78
Contemplation	243	8	0.88
Action	242	8	0.83
Maintenance	242	8	0.87

Table 8a. Inter-Item Correlations for URICA Pre-Contemplation Subscale.

	U1	U5	U11	U13	U23	U26	U29	U31
U1	--							
U5	0.53	--						
U11	0.48	0.67	--					
U13	0.39	0.49	0.49	--				
U23	0.23	0.36	0.34	0.36	--			
U26	0.21	0.32	0.35	0.27	0.23	--		
U29	0.07	0.25	0.27	0.12	0.12	0.39	--	
U31	0.15	0.13	0.17	0.09	0.02	0.38	0.40	--

Table 8b. Inter-Item Correlations for URICA Contemplation Subscale.

	U2	U4	U8	U12	U15	U19	U21	U24
U2	--							
U4	0.53	--						
U8	0.54	0.43	--					
U12	0.42	0.47	0.41	--				
U15	0.48	0.61	0.46	0.50	--			
U19	0.39	0.51	0.41	0.52	0.59	--		
U21	0.49	0.58	0.39	0.69	0.57	0.61	--	
U24	0.29	0.46	0.28	0.53	0.39	0.45	0.59	--

Table 8c. Inter-Item Correlations for URICA Action Subscale.

	U3	U7	U10	U14	U17	U20	U25	U30
U3	--							
U7	0.49	--						
U10	0.19	0.38	--					
U14	0.44	0.53	0.25	--				
U17	0.26	0.37	0.28	0.28	--			
U20	0.35	0.46	0.45	0.37	0.41	--		
U25	0.32	0.46	0.13	0.51	0.36	0.40	--	
U30	0.43	0.54	0.20	0.56	0.38	0.47	0.62	--

Table 8d. Inter-Item Correlations for URICA Maintenance Subscale.

	U6	U9	U16	U18	U22	U27	U28	U32
U6	--							
U9	0.60	--						
U16	0.51	0.45	--					
U18	0.56	0.53	0.46	--				
U22	0.49	0.43	0.39	0.52	--			
U27	0.46	0.40	0.37	0.40	0.57	--		
U28	0.44	0.43	0.41	0.63	0.36	0.31	--	
U32	0.45	0.34	0.37	0.56	0.37	0.34	0.41	--

Table 9a. Scale Reliability Statistics for Pre-Treatment Variables.

	N	Mean	Alpha If Item Deleted
Pre-Psychopathology	223	3.09	0.69
Pre-Maturity	223	6.50	0.69
Pre-Risk	223	2.61	0.71
Pre-Denial	223	3.25	0.77
Pre-Impulsivity	223	3.91	0.64

Table 9b. Scale Reliability Statistics for Post-Treatment Variables.

	N	Mean	Alpha If Item Deleted
Post-Psychopathology	198	2.81	0.66
Post-Maturity	198	5.63	0.64
Post-Risk	198	1.94	0.67
Post-Denial	198	2.68	0.79
Post-Impulsivity	198	3.40	0.64

Table 10a. Initial Iterative Cluster Analysis with Scale Sc (Three-Cluster Solution).

	Cluster		
	1 (N=101)	2 (N=90)	3 (N=37)
MMPI F	50.58	64.18	84.46
MMPI K	55.64	56.34	47.19
MMPI D	49.78	58.90	67.43
MMPI Pd	59.03	66.12	75.57
MMPI Mf	46.39	49.28	50.16
MMPI Pa	52.59	65.37	76.49
MMPI Pt	48.24	58.88	73.08
MMPI Sc	50.36	64.57	82.27
MMPI Ma	52.09	51.99	61.51

Footnote. In examining the means, Cluster 1 is comprised of 101 sex offenders who all have mean MMPI scale t-scores below the cut-off for clinical significance (i.e., 65). One may characterize this group as having profiles within normal limits (Megargee, 2006). Cluster 2 is comprised of sex offenders with clinically significant t-scores on Scales Pd and Pa, with Scales F and Sc close to clinical elevations. This profile is common in sex offenders and is indicative of hostility, distrust, and violent behaviors (Megargee, 2006). However, because these elevations are below 75, the extent of these behaviors may be mild (Megargee, 2006). Cluster 3 is comprised of sex offenders with clinically significant elevations on Scales F, D, Pd, Pa, Pt, and Sc. Criminals with scores above 75 on these scales tend to be emotionally and behaviorally unstable (Megargee).

Table 10b. Initial Iterative Cluster Analysis without Scale Sc (Three-Cluster Solution).

	Cluster		
	1 (N=104)	2 (N=83)	3 (N=41)
MMPI F	50.30	64.70	83.15
MMPI K	57.03	54.92	47.51
MMPI D	49.79	58.54	67.98
MMPI Pd	58.89	66.25	75.24
MMPI Mf	45.05	50.83	50.54
MMPI Pa	52.94	64.83	76.54
MMPI Pt	48.83	58.02	72.71
MMPI Ma	52.20	51.94	60.39

Footnote. The pattern of means in this set of clusters which excludes Scale Sc is similar to the previous described pattern of clusters which included Scale Sc.

Table 11a. Initial Iterative Cluster Analysis with Scale Sc (Four-Cluster Solution).

	Cluster			
	1 (N=103)	2 (N=66)	3 (N=41)	4 (N=18)
MMPI F	51.78	58.29	80.56	84.83
MMPI K	54.59	59.65	50.41	45.00
MMPI D	49.20	61.02	57.66	75.83
MMPI Pd	58.74	66.70	69.24	78.78
MMPI Mf	46.03	50.14	47.02	55.44
MMPI Pa	53.08	65.18	68.05	81.44
MMPI Pt	47.98	59.36	63.80	77.72
MMPI Sc	50.70	63.53	72.39	86.56
MMPI Ma	52.83	48.83	61.80	56.50

Footnote. Clusters 1 and 4 are conceptually similar to Clusters 1 and 3 in Tables 10a and 10b. Clusters 2 and 3 of this four-cluster solution are similar to Cluster 2 in the three-cluster solution. One difference is that the Scale F score of Cluster 2 in this solution is lower than the Scale F score of the previously described Cluster 2. This could mean that the offenders in this Cluster 2 are exaggerating less or malingering less than the offenders in the previously described Cluster 2. Another difference is that Cluster 3 of this four-cluster solution has higher scores on Scale F, Sc, and Ma, though the Ma t-scores do not reach clinical significance. These offenders may be impulsive and have significant problems with thought disorders (Megargee, 2006).

Table 11b. Initial Iterative Cluster Analysis without Scale Sc (Four-Cluster Solution).

	Cluster			
	1 (N=70)	2 (N=80)	3 (N=52)	4 (N=26)
MMPI F	51.34	54.10	77.35	79.46
MMPI K	53.17	61.60	49.62	46.42
MMPI D	46.91	58.15	57.29	73.42
MMPI Pd	56.80	64.86	67.19	78.85
MMPI Mf	45.13	49.16	47.69	54.00
MMPI Pa	51.77	60.85	66.35	80.12
MMPI Pt	46.46	56.36	60.37	75.96
MMPI Ma	54.79	47.49	59.33	57.58

Footnote. The pattern of means in this set of clusters which excludes Scale Sc is similar to the pattern of means which included Scale Sc. One noticeable difference is that the means of these clusters are generally lowering, making some of the scales which were clinically significant in the solution which included Scale Sc no longer so (e.g., Scales Pd and Pa of Cluster 2). This could be due to the high correlation between Scale Sc and Pa. Please see main text for further explanations.

Table 12a. Initial Iterative Cluster Analysis with Scale Sc (Five-Cluster Solution).

	Cluster				
	1 (N=74)	2 (N=60)	3 (N=49)	4 (N=35)	5 (N=10)
MMPI F	48.53	54.48	71.02	80.31	85.90
MMPI K	54.57	62.28	50.49	49.63	45.10
MMPI D	48.78	58.90	54.45	70.14	55.70
MMPI Pd	56.64	67.15	63.49	74.94	75.50
MMPI Mf	45.55	49.45	48.24	52.86	42.40
MMPI Pa	51.99	61.83	62.86	78.77	63.10
MMPI Pt	46.61	57.22	56.47	74.86	60.60
MMPI Sc	48.59	61.30	62.61	80.31	78.80
MMPI Ma	52.58	48.37	54.82	55.57	79.20

Footnote. Cluster 1 is comprised of sex offenders with t-scores within normal ranges. Cluster 2 is comprised of a single elevation on Scale Pd. Offenders with this profile tend to be dishonest, manipulative, and have unstable relationships (Megargee, 2006). Cluster 3 is comprised of a single elevation on Scale F. These offenders may be intentionally exaggerating their symptoms or randomly responding to the questions (Megargee, 2006). Cluster 4 is characterized by elevations on Scales F, D, Pd, Pa, Pt, and Sc similar to a previously described cluster which was conceptualized as emotionally and behaviorally unstable. Cluster 5 is characterized by elevations on Scales F, Pd, Sc, and Ma. Offenders with this profile are often irritable and difficult to manage, even in correctional settings (Megargee, 2006). They may need further evaluation for the presence of thought disorders or suicidal ideation (Megargee, 2006).

Table 12b. Initial Iterative Cluster Analysis without Scale Sc (Five-Cluster Solution).

	Cluster				
	1 (N=84)	2 (N=60)	3 (N=40)	4 (N=29)	5 (N=15)
MMPI F	48.07	62.48	65.18	82.97	80.67
MMPI K	58.44	58.28	48.63	48.45	45.40
MMPI D	50.77	61.73	47.58	71.66	58.27
MMPI Pd	59.92	66.70	59.15	74.59	76.33
MMPI Mf	45.04	50.22	49.15	53.31	44.53
MMPI Pa	52.45	66.33	58.35	78.45	68.67
MMPI Pt	48.95	60.50	49.33	75.07	65.53
MMPI Ma	50.55	49.63	57.05	53.59	77.07

Footnote. The pattern of means in the set of clusters excluding Scale Sc is similar to the pattern of means including Scale Sc. One difference is, when Scale Sc is removed, Scales Pa and Pt in Cluster 5 reach clinical significance which suggests that, because these variables highly correlate with Sc, they may be treated as one variable when Sc is included and their individual variance is being overlooked. After examining these means, in general, there is no conceptual difference between the cluster solutions with and without Scale Sc. Because of this and the high correlations between Scale Sc and Scales F, Pa, and Pt (see Table 6b), a more conservative approach was taken and Scale Sc was excluded from the subsequent cluster analyses.

Table 13a. Means for Three-Cluster Solution (Agglomerative Hierarchical).

	Clusters		
	1 (N=107)	2 (N=62)	3 (N=59)
MMPI F	50.59	61.79	80.78
MMPI K	56.95	55.23	49.47
MMPI D	50.12	60.13	63.27
MMPI Pd	58.16	68.40	71.95
MMPI Mf	45.19	52.53	48.89
MMPI Pa	54.22	63.98	72.14
MMPI Pt	49.72	57.74	67.37
MMPI Ma	51.60	50.73	60.17

Footnote. Cluster 1 is composed of sex offenders whose t-scores are within normal ranges, which means they could be classified as having psychological profiles within normal limits (Megargee, 2006). Cluster 2 is composed of sex offenders who have t-score elevations on scales Pd only; they may be characterized as dishonest and manipulative (Megargee, 2006). Cluster 3 has t-score elevations on Scales F, Pd, Pa, and Pt. Offenders with this profile tend to be suspicious, hostile, narcissistic and aggressive (Megargee, 2006).

Table 13b. Means for Four-Cluster Solution (Agglomerative Hierarchical).

	Clusters			
	1 (N=107)	2 (N=62)	3 (N=23)	4 (N=36)
MMPI F	50.59	61.79	77.43	82.92
MMPI K	56.95	55.23	49.48	49.47
MMPI D	50.12	60.13	57.65	66.86
MMPI Pd	58.16	68.40	74.39	70.39
MMPI Mf	45.19	52.53	44.61	51.61
MMPI Pa	54.22	63.98	62.35	78.39
MMPI Pt	49.72	57.74	60.96	71.47
MMPI Ma	51.60	50.73	71.35	53.03

Footnote. Clusters 1 and 2 of the three-cluster solution were repeated in the four-cluster solution. Cluster 3 of the three-cluster solution was divided into two separate clusters. Cluster 3 of the four-cluster solution is characterized by elevations on Scales F, Pd, and Ma. These offenders may be impulsive, manipulative, and aggressive (Megargee, 2006). Cluster 4 was characterized by elevations on scales F, D, Pd, Pa, and Pt. Offenders with this profile tend to be emotionally and behaviorally unstable.

Table 13c. Means for Nine-Cluster Solution (Agglomerative Hierarchical).

	Clusters								
	1 (N=50)	2 (N=29)	3 (N=28)	4 (N=29)	5 (N=26)	6 (N=7)	7 (N=23)	8 (N=31)	9 (N=5)
F	54.14	46.52	48.46	63.90	55.73	75.57	77.43	82.58	85.00
K	55.54	63.31	52.89	58.97	54.54	42.26	49.48	50.81	41.20
D	53.08	52.90	41.96	63.28	60.00	47.57	57.65	63.42	88.20
Pd	54.16	61.59	61.75	64.14	73.85	65.86	74.39	68.03	85.00
Mf	41.74	51.10	45.21	52.38	50.54	60.57	44.61	50.90	56.00
Pa	50.32	61.10	54.07	63.69	64.54	63.14	62.35	76.52	90.00
Pt	49.58	53.28	46.29	63.55	54.42	46.00	60.96	69.42	84.20
Ma	48.88	48.28	59.89	46.07	55.81	51.14	71.35	51.97	59.60

Footnote. Clusters 1, 2, 3, and 4 are each characterized by t-scores within normal ranges. Cluster 5 is characterized by a single elevation on Scale Pd with Scale Pa being just below clinical levels. These offenders are characterized by hostility and narcissism (Megargee, 2006). Cluster 6 is comprised of sex offenders with elevations on Scales F and Pd. These offenders may be manipulative and dishonest (Megargee, 2006). Cluster 7 is characterized by elevations on Scales F, Pd, and Ma. These offenders may be dishonest and impulsive (Megargee, 2006). Cluster 8 is comprised of sex offenders with elevations on Scales F, Pd, Pa, and Pt. These offenders may be dishonest, mistrusting, and anxious (Megargee, 2006). Cluster 9 is characterized by elevations on Scales F, D, Pd, Pa, and Pt. These offenders may be emotionally unstable and prone to hostility (Megargee, 2006). Based on these results the four-cluster solution may capture the heterogeneity of psychopathology in sex offenders better than the three-cluster solution without being repetitive as in the nine-cluster solution. To further examine this hypothesis, the four-cluster solution was tested for stability in the dataset.

Table 14. Final Iterative Cluster Analysis (Four-Cluster Solution).

	Cluster				
	WNL (N=86)	Hostile (N=69)	Manipulative (N=36)	Disturbed (N=37)	Sample (N=228)
MMPI F	49.83	57.84	75.92	81.11	64.14
MMPI K	55.83	59.65	47.47	48.95	54.55
MMPI D	49.00	59.77	53.06	69.62	56.25
MMPI Pd	56.74	66.70	67.67	75.43	64.51
MMPI Mf	45.03	50.19	47.00	52.65	48.14
MMPI Pa	51.97	64.52	61.11	78.49	61.51
MMPI Pt	47.87	58.01	55.89	74.14	56.47
MMPI Ma	52.15	48.68	63.42	56.46	53.58

Footnote 1. The means of the final iterative solution are similar to those in the hierarchical solution, with the exception that the Scale Ma of the Manipulative cluster is no longer clinically significant. Please see main text for conceptual descriptions.

Footnote 2. The sample means were included in this table for comparative purposes only. These means were not included as a cluster in the analyses.

Table 15. Case Description of Cluster Assignment.

Case #	Hierarchical Cluster Membership	Final Iterative Cluster Membership	Case #	Hierarchical Cluster Membership	Final Iterative Cluster Membership
1	Hostile	Hostile	41	WNL	WNL
2	Hostile	Manipulative	42	Manipulative	Manipulative
3	Disturbed	Manipulative	43	WNL	WNL
4	Hostile	Hostile	44	WNL	Hostile
5	WNL	WNL	45	Manipulative	Manipulative
6	Disturbed	Manipulative	46	Manipulative	Manipulative
7	WNL	WNL	47	Hostile	Manipulative
8	Manipulative	Manipulative	48	WNL	Hostile
9	WNL	WNL	49	Hostile	Hostile
10	WNL	WNL	50	Disturbed	Disturbed
11	WNL	Hostile	51	WNL	WNL
12	WNL	WNL	52	WNL	WNL
13	WNL	WNL	53	WNL	WNL
14	WNL	WNL	54	WNL	WNL
15	Disturbed	Disturbed	55	WNL	WNL
16	WNL	WNL	56	WNL	WNL
17	WNL	WNL	57	Hostile	Hostile
18	WNL	Hostile	58	Manipulative	Disturbed
19	Hostile	Hostile	59	Hostile	Hostile
20	WNL	WNL	60	Disturbed	Disturbed
21	WNL	WNL	61	Disturbed	Disturbed
22	Hostile	Manipulative	62	WNL	WNL
23	Hostile	Hostile	63	WNL	WNL
24	WNL	WNL	64	WNL	WNL
25	WNL	WNL	65	Hostile	Manipulative
26	Hostile	Hostile	66	Hostile	Hostile
27	Hostile	Disturbed	67	WNL	Hostile
28	Disturbed	Disturbed	68	WNL	WNL
29	WNL	WNL	69	WNL	WNL
30	Hostile	Manipulative	70	WNL	WNL
31	Manipulative	Disturbed	71	WNL	Hostile
32	WNL	Hostile	72	WNL	WNL
33	WNL	WNL	73	Hostile	Hostile
34	WNL	Hostile	74	Hostile	Hostile
35	WNL	WNL	75	Disturbed	Disturbed
36	WNL	WNL	76	WNL	WNL
37	Disturbed	Disturbed	77	WNL	WNL
38	Hostile	Hostile	78	Manipulative	Disturbed
39	WNL	WNL	79	WNL	Manipulative
40	WNL	WNL	80	WNL	Hostile

Table 15 (cont'd).

Case #	Hierarchical Cluster Membership	Final Iterative Cluster Membership
81	WNL	WNL
82	Manipulative	Manipulative
83	Hostile	Hostile
84	Disturbed	Disturbed
85	Hostile	Disturbed
86	WNL	WNL
87	WNL	WNL
88	Hostile	Hostile
89	WNL	WNL
90	Manipulative	Manipulative
91	Manipulative	Manipulative
92	WNL	WNL
93	Hostile	Hostile
94	Hostile	Hostile
95	Disturbed	Disturbed
96	WNL	WNL
97	Disturbed	Hostile
98	Hostile	Hostile
99	Disturbed	Disturbed
100	Hostile	Hostile
101	Manipulative	Manipulative
102	WNL	WNL
103	WNL	Manipulative
104	Manipulative	Manipulative
105	WNL	WNL
106	Hostile	Hostile
107	Manipulative	Disturbed
108	Disturbed	Disturbed
109	WNL	WNL
110	WNL	WNL
111	WNL	WNL
112	Disturbed	Disturbed
113	Hostile	Hostile
114	Hostile	WNL
115	WNL	WNL
116	WNL	WNL
117	Hostile	Hostile
118	Manipulative	Manipulative
119	Disturbed	Disturbed
120	Disturbed	Disturbed
121	Manipulative	Disturbed
122	WNL	WNL
123	WNL	WNL
124	WNL	WNL
125	WNL	WNL
126	WNL	WNL
127	Hostile	Hostile
128	Hostile	Hostile
129	WNL	WNL
130	Hostile	Hostile
131	Hostile	Hostile
132	WNL	Hostile
133	WNL	WNL
134	WNL	WNL
135	Manipulative	Manipulative
136	Disturbed	Disturbed
137	WNL	WNL
138	WNL	WNL
139	WNL	WNL
140	WNL	WNL
141	WNL	WNL
142	WNL	WNL
143	Hostile	Hostile
144	WNL	WNL
145	Disturbed	Disturbed
146	Hostile	Hostile
147	WNL	WNL
148	Hostile	Hostile
149	WNL	WNL
150	WNL	WNL
151	WNL	WNL
152	Hostile	Hostile
153	Hostile	Hostile
154	WNL	WNL
155	WNL	WNL
156	Disturbed	Disturbed
157	Disturbed	Disturbed
158	Disturbed	Manipulative
159	Hostile	Hostile
160	WNL	WNL
161	Hostile	Manipulative
162	WNL	WNL
163	WNL	WNL
164	WNL	Manipulative

Table 15 (cont'd).

Case #	Hierarchical Cluster Membership	Final Iterative Cluster Membership	Case #	Hierarchical Cluster Membership	Final Iterative Cluster Membership
165	Hostile	Hostile	197	Disturbed	Disturbed
166	WNL	Hostile	198	Hostile	Manipulative
167	WNL	WNL	199	Disturbed	Manipulative
168	Disturbed	Hostile	200	WNL	Hostile
169	Hostile	Hostile	201	WNL	WNL
170	Hostile	Manipulative	202	WNL	Hostile
171	Manipulative	Disturbed	203	Disturbed	Disturbed
172	Disturbed	Disturbed	204	Disturbed	Hostile
173	Hostile	Hostile	205	Manipulative	Manipulative
174	WNL	WNL	206	Manipulative	Manipulative
175	WNL	WNL	207	Hostile	Manipulative
176	WNL	Hostile	208	Disturbed	Disturbed
177	Manipulative	Manipulative	209	WNL	WNL
178	Hostile	Hostile	210	Manipulative	Manipulative
179	Disturbed	Disturbed	211	Hostile	Hostile
180	Hostile	Manipulative	212	Disturbed	Disturbed
181	Hostile	Hostile	213	WNL	Hostile
182	Hostile	Disturbed	214	Hostile	Hostile
183	WNL	Hostile	215	WNL	Hostile
184	Hostile	Hostile	216	WNL	Hostile
185	Hostile	Manipulative	217	Hostile	Hostile
186	Hostile	Hostile	218	Hostile	Hostile
187	Manipulative	Manipulative	219	WNL	WNL
188	WNL	WNL	220	WNL	WNL
189	WNL	WNL	221	WNL	WNL
190	WNL	Hostile	222	Disturbed	Disturbed
191	Hostile	Manipulative	223	Disturbed	Hostile
192	WNL	Hostile	224	Manipulative	Manipulative
193	Hostile	Hostile	225	Hostile	Hostile
194	Disturbed	Disturbed	226	WNL	WNL
195	Disturbed	Disturbed	227	Hostile	WNL
196	Hostile	Hostile	228	Disturbed	Disturbed

Footnote. According to this table, 27% of cases changed from the Hostile cluster to another cluster. Twenty-two percent of cases changed from the Disturbed cluster to another cluster. Twenty-one percent of cases changed from the WNL cluster to another cluster and 26% of cases changed from the Manipulative cluster to another cluster. A total of 76% of the sample did not change their cluster assignment from the hierarchical solution to the iterative solution.

Table 16a. MANOVA for Cluster Membership and MMPI scales.

	df	F	Eta-Squared
Pillai's Trace	24, 657	22.63***	0.45
Wilks' Lambda	24, 629.97	34.87***	0.56
Hotelling's Trace	24, 647	51.45***	0.66
Roy's Largest Root	8, 219	130.61***	0.83

*p < .05.
**p < .01.
***p < .001.

Table 16b. Between-Subject Effects for MANOVA in Table 16a.

	df	F	Eta-Squared
MMPI F	3, 224	125.85***	0.63
MMPI K	3, 224	21.19***	0.22
MMPI D	3, 224	57.64***	0.44
MMPI Pd	3, 224	43.94***	0.37
MMPI Mf	3, 224	8.87***	0.11
MMPI Pa	3, 224	89.06***	0.54
MMPI Pt	3, 224	107.05***	0.59
MMPI Ma	3, 224	22.38***	0.23

*p < .05.
**p < .01.
***p < .001.

Table 17. Summary of Cross-Validation Analyses for Demographic, Offense, and Clinical Variables.

	Clusters				Statistics	
N (max=228)	WNL (N=86)	Hostile (N=69)	Manipulative (N=36)	Disturbed (N=37)	χ^2 (df)	F (df)
Race [a] (% White)	81%	68%	64%	73%	5.45 (3)	--
Education [a] (% High School or more)	71% (59/83)	74% (50/68)	70% (23/33)	71% (25/35)	3.81 (6)	--
Marital Status [a] (% Ever Married)	41% (34/82)	55% (34/62)	67% (14/21)	50% (17/34)	3.33 (3)	--
Employment (% Employed)	57%	54%	53%	62%	0.91 (3)	--
Parenthood (% With Children)	52%	74%	50%	59%	9.14* (3)	--
Offender's Age (Mean, Std. Dev.)	31.46^{c} (9.90)	39.83^{b} (13.20)	31.69^{c} (11.34)	34.88 (9.65)	--	7.78*** (3, 215)
Offense Type (% With 4th Degree)	47% (40/85)	41% (28/68)	39%	46%	12.12 (9)	--
Penetration (% Who Used It)	63%	64%	53%	67% (24/36)	1.75 (3)	--
Alcohol at Offense (% Who Used It)	36%	40% (27/68)	39%	38%	0.24 (3)	--
Drugs at Offense (% Who Used It)	17%	19% (13/67)	39%	28% (10/36)	7.56 (3)	--
Victim Status (% With Child Victims)	80% (63/79)	82% (54/66)	89% (31/35)	74% (26/35)	2.43 (3)	--
Victim Gender (% With Female Victims)	98% (83/85)	87% (59/68)	94% (32/34)	95%	7.34 (3)	--
Relationship to Victim [a] (% Who Knew Victim)	64% (54/85)	69% (47/68)	53%	58% (21/36)	3.03 (3)	--
Supervision Status (% On Probation)	62% (52/84)	62% (41/66)	57% (20/35)	67% (24/36)	0.68 (3)	--
Prior Adult Offenses (% With Prior Offenses)	59% (45/76)	59% (37/63)	78% (25/32)	72% (26/36)	5.35 (3)	--
Juvenile Record (% With Record)	22% (16/74)	18% (11/62)	41% (13/32)	18% (6/34)	7.26 (3)	--
Victim's Age (Mean, Std. Dev.)	13.63 (4.99)	14.14 (9.10)	12.26 (6.16)	14.22 (6.09)	--	0.57 (3, 194)

[a] = Results unchanged when using three or more divisions.

[b, c] = Means with different superscripts significantly differ from each other but not from those lacking subscripts. Means with the same superscript do not differ from each other but do differ from a different (marked) cluster. Means without superscripts do not significantly differ from any of the other clusters for that variable.

Table 17 (cont'd).

	Clusters				Statistics	
N (max=228)	WNL (N=86)	Hostile (N=69)	Manipulative (N=36)	Disturbed (N=37)	χ^2 (df)	F (df)
Prison Time (Months) (Mean, Std. Dev.)	33.21 (48.98)	28.80 (36.11)	31.24 (38.95)	33.77 (48.97)	--	0.16 (3, 223)
Treatment Completion (% Who Completed)	85%	81%	64%	76%	7.18 (3)	--
Attendance Record (Max=30) (Mean, Std. Dev.)	25.43^b (6.84)	24.84 (7.84)	20.67^c (10.23)	22.84 (9.56)	--	4.12** (3, 223)
Pre-Treatment Score (Mean, Std. Dev.)	18.16^b (3.38)	19.31 (4.04)	20.04^c (3.60	19.09 (3.54)	--	2.58 (3, 223)
Post-Treatment Score[2] (Mean, Std. Dev.)	13.26 (6.72)	13.00 (7.51)	11.06 (8.91)	12.35 (8.00)	--	0.89 (3, 223)
Clinical Change Score[1] (Mean, Std. Dev.)	-2.06 (4.12)	-2.45 (4.02)	-1.40 (3.91)	-1.74 (3.24)	--	0.64 (3, 223)
Pre-Denial Score (Mean, Std. Dev.)	3.07 (1.40)	3.52 (1.63)	3.56 (1.64)	3.12 (1.30)	--	1.70 (3, 223)
Post-Denial Score[2] (Mean, Std. Dev.)	2.18 (1.73)	2.36 (2.12)	1.69 (1.91)	1.59 (1.69)	--	1.84 (3, 223)
Denial Change Score[1] (Mean, Std. Dev.)	-0.34 (1.42)	-0.44 (1.60)	-0.40 (1.44)	-0.59 (1.00)	--	0.28 (3, 223)
Motivation to Change (Mean, Std. Dev.)	7.56^b (2.54)	7.64 (2.59)	8.31 (2.45)	8.91^c (2.23)	--	3.02* (3, 223)

[b, c] = Means with different superscripts significantly differ from each other but not from those lacking subscripts. Means with the same superscript do not differ from each other but do differ from a different (marked) cluster. Means without superscripts do not significantly differ from any of the other clusters for that variable.

[1] = These variables are scored such that higher scores indicate higher levels of psychopathology. Thus, the negative values are indicative of a decrease in psychopathology or denial rather than a worse treatment response.

[2] = The Missing values covariate was significant for these two variables ($p < .05$). This result is not surprising given that these two variables had a large number of missing values.

*$p < .05$.

**$p < .01$.

Table 18a. Hierarchical Regression for Cluster Membership and Motivation to Change Predicting Post-Treatment Scores.

Variable	B	SE B	ß
Motivation to Change	-0.63	0.20	-0.21**
Dummy Code—Hostile	-0.22	1.20	-0.01
Dummy Code—Manipulative	-1.73	1.48	-0.08
Dummy Code--Disturbed	-0.06	1.48	-0.00

Note. $R^2 = 0.05$ ($p < .01$).
**$p < .01$.

Table 18b. Hierarchical Regression for Cluster Membership and Motivation to Change Predicting Post-Denial Scores.

Variable	B	SE B	ß
Motivation to Change	-0.29	0.05	-0.38***
Dummy Code—Hostile	0.20	0.28	0.05
Dummy Code—Manipulative	-0.27	0.35	-0.05
Dummy Code--Disturbed	-0.20	0.35	-0.04

Note. $R^2 = 0.16$ ($p < .001$).
***$p<.001$.

Table 18c. Hierarchical Regression for Cluster Membership and Motivation to Change Predicting Clinical Change.

Variable	B	SE B	ß
Motivation to Change	0.09	0.11	0.06
Dummy Code—Hostile	-0.40	0.64	-0.05
Dummy Code—Manipulative	0.59	0.78	0.06
Dummy Code--Disturbed	0.19	0.79	0.02

Note. $R^2 = 0.01$ (n.s.).

Table 18d. Hierarchical Regression for Cluster Membership and Motivation to Change Predicting Denial Change.

Variable	B	SE B	ß
Motivation to Change	-0.04	0.04	-0.07
Dummy Code—Hostile	-0.10	0.23	-0.03
Dummy Code—Manipulative	-0.03	0.28	-0.01
Dummy Code--Disturbed	-0.20	0.29	-0.05

Note. $R^2 = 0.01$ (n.s.).

APPENDIX B

Figures for Statistical Results

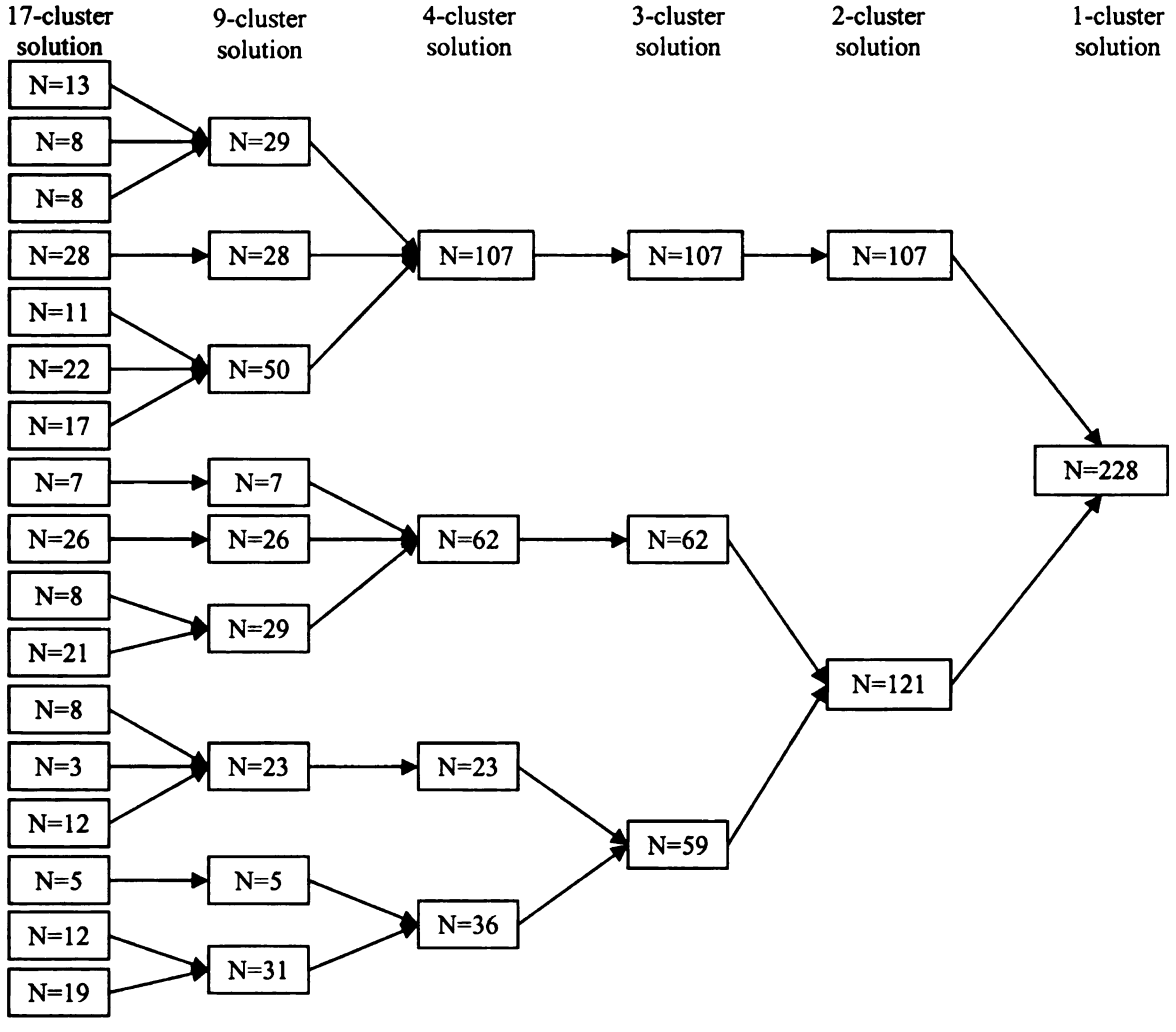


Figure 1. Diagram of Agglomerative Hierarchical Cluster Analysis (N=228).

Footnote. Based on the results from the hierarchical analyses, it was determined that the 17-cluster solution produced clusters which contained N's too small to detect effects during the cross-validation analyses. Also the two-cluster solution did not seem to reflect enough of the heterogeneity of this sample of sex offenders. Thus, the means from the nine-, four-, and three-cluster solutions were examined to determine which of those solutions best fit the data (see Tables 13a-13c). Because of the iterative results (see Tables 10a-12b) which indicated that that four cluster solution was able to produce a conceptually meaningful cluster that the three-cluster solution could not, it was hypothesized that the four-cluster solution would best fit the data.

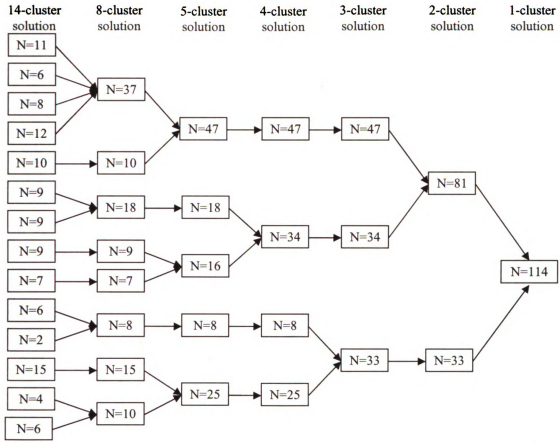


Figure 2. Diagram of Agglomerative Hierarchical Cluster Analysis for Random Half of Dataset (N=114).

	Cluster			
	1 (N=34)	2 (N=47)	3 (N=25)	4 (N=8)
MMPI F	62.65	48.43	80.88	77.00
MMPI K	53.65	56.98	52.08	46.50
MMPI D	57.65	50.11	65.92	46.25
MMPI Pd	56.26	61.57	72.20	71.25
MMPI Mf	52.21	45.66	51.28	47.00
MMPI Pa	61.56	54.51	74.12	68.88
MMPI Pt	**54.79**	**49.21**	**68.96**	**53.50**
MMPI Ma	46.62	52.77	56.68	73.50

Footnote. This figure and Figure 3 summarize the split-half stability test used to test the reliability of the four-cluster solution in the dataset. The full sample was randomly split in half and a hierarchical cluster analysis was performed in each half with the goal of finding a four-cluster solution in each half of the data. Figure 2 demonstrates that, similar to the full dataset, this random sample of 114 cases yields a four-cluster solution. This result suggests that the four-cluster solution is stable. The four-cluster means are highlighted in accordance with the findings of the hierarchical analysis.

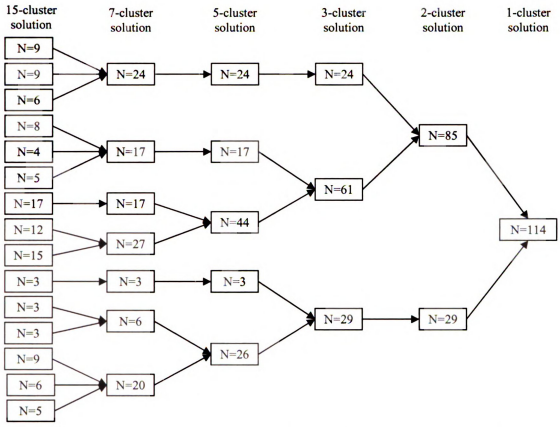


Figure 3. Diagram of Agglomerative Hierarchical Cluster Analysis for Other Random Half of Dataset (N=114).

	Cluster				
	1 (N=44)	2 (N=26)	3 (N=17)	4 (N=24)	5 (N=3)
MMPI F	55.89	80.42	64.24	45.13	80.33
MMPI K	62.77	48.50	47.12	54.63	42.00
MMPI D	56.59	65.08	51.82	47.67	94.67
MMPI Pd	68.70	72.04	64.35	52.96	88.67
MMPI Mf	47.59	48.62	45.53	46.38	50.67
MMPI Pa	59.75	72.81	57.35	50.13	88.67
MMPI Pt	55.89	69.54	54.71	45.29	87.67
MMPI Ma	50.07	56.81	60.59	52.33	60.00

Footnote. A four-cluster solution was not found in this half of the dataset, which is not uncommon given the small sample size (Rapkin & Luke, 1993). Thus, because the four-cluster solution maximizes heterogeneity and still leaves enough power for cross validation, it was determined to best fit the data for this sample. The means from the four-cluster solution of the hierarchical analysis (see Table 13b) were used as the initial cluster centers (i.e., starting points) for the final iterative solution. This yielded the final four-cluster solution which was used in the analyses (means described in Table 14; depiction in Figure 4).

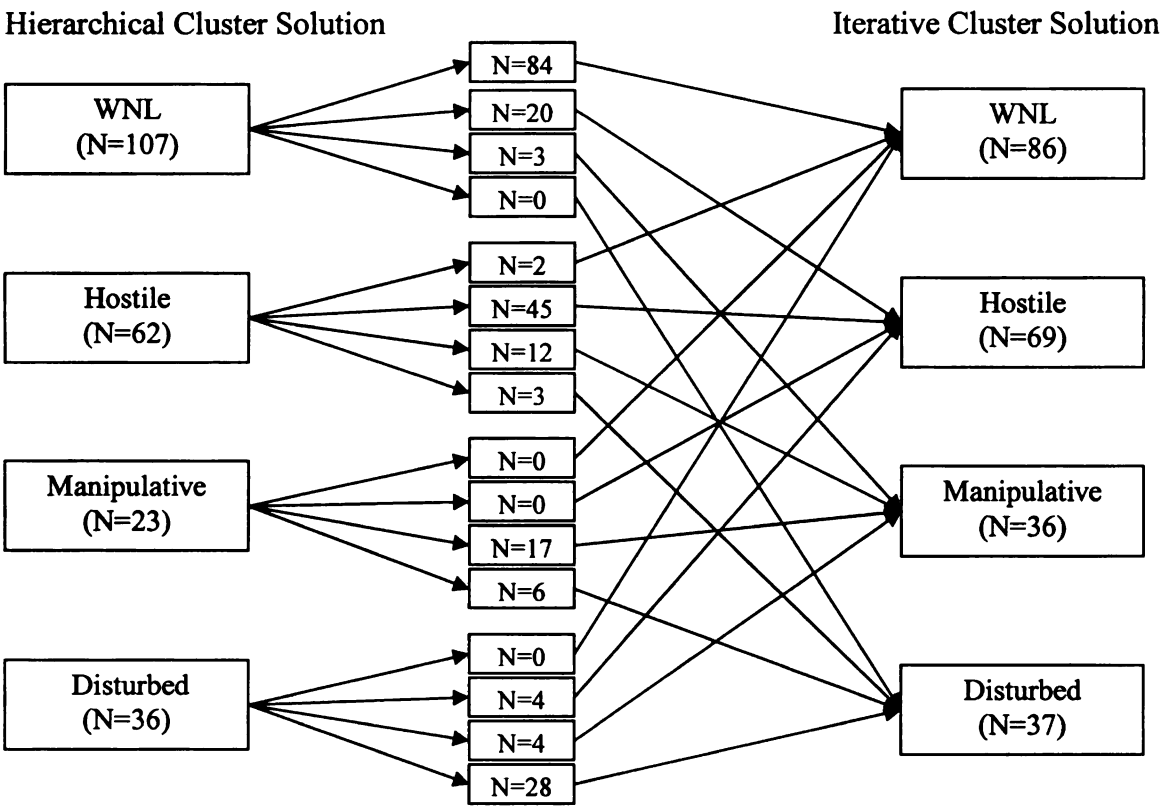
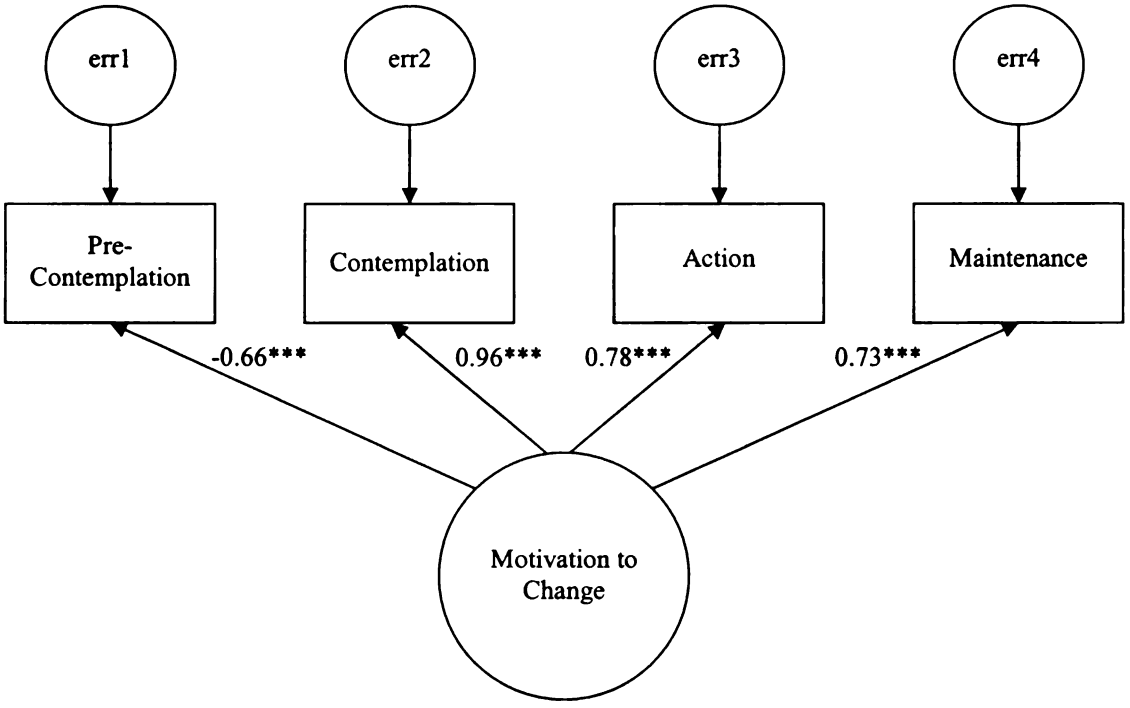


Figure 5. Case Migration from Hierarchical Solution to Final Iterative Solution.

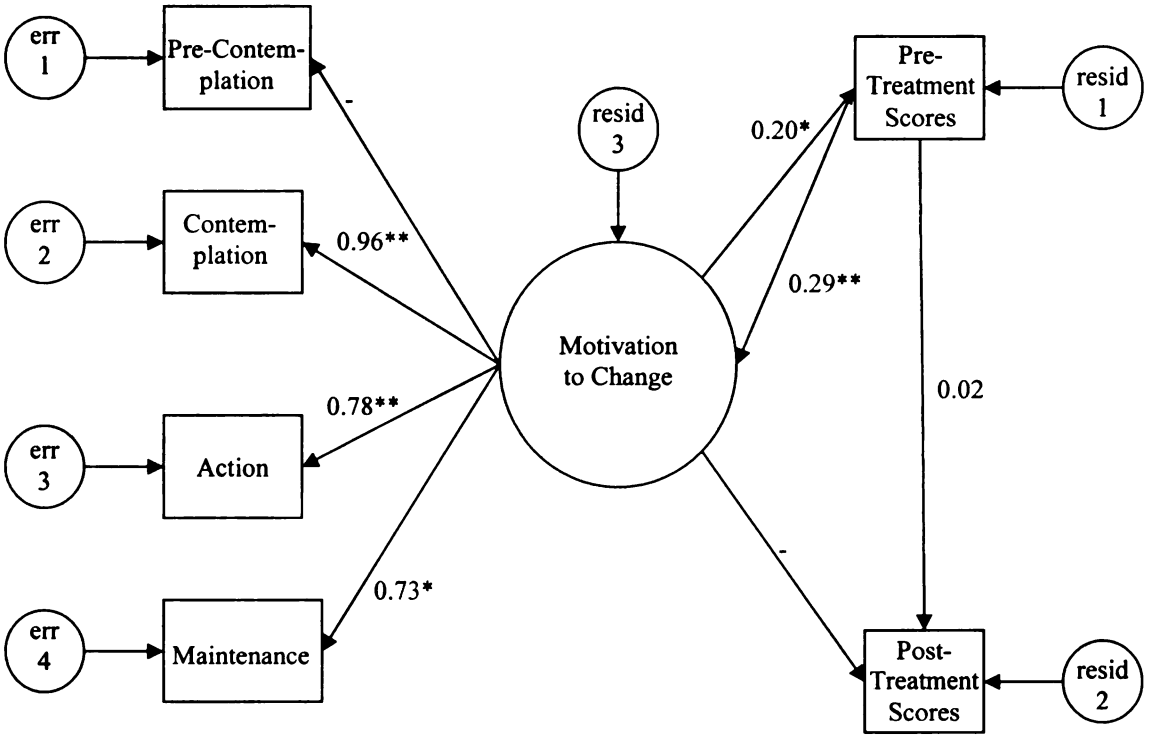
Footnote. In summary, from the hierarchical WNL cluster, 84 cases moved to the iterative WNL cluster; 20 cases moved to the iterative Hostile cluster; 3 moved to the iterative Manipulative cluster; and zero cases moved to the iterative Disturbed cluster. From the hierarchical Hostile cluster, 2 cases moved to the iterative WNL cluster; 45 cases moved to the iterative Hostile cluster; 12 moved to the iterative Manipulative cluster; and 3 moved to the iterative Disturbed cluster. From the hierarchical Manipulative cluster, zero cases moved to the iterative WNL or the iterative Hostile clusters; 17 cases moved to the iterative Manipulative cluster; and 6 moved to the iterative Disturbed cluster. From the hierarchical Disturbed cluster, zero cases moved to the iterative WNL cluster; 4 cases moved to the iterative Hostile cluster; 4 moved to the iterative Manipulative cluster; and 28 moved to the iterative Disturbed cluster. In each hierarchical cluster, approximately 25% of the cases (range: 21% to 27%; see footnote of Table 15) moved to a different cluster in the iterative solution. Reasons for this switch are provided in the main text.



Chi-square=2.97; df=2; p=0.23; GFI=0.99; CFI=1.00; RMSEA=0.05; BIC=46.40

Figure 6. SEM Analysis Testing Motivation to Change as a Single Latent Construct.

Footnote. Standardized estimates are reported.
***. $p < .001$.



Chi-square=15.1; df=8; p=0.06; GFI=0.98; CFI=0.99; RMSEA=0.06; BIC=85.71

Figure 7. SEM Analysis Validating Motivation to Change Using Treatment Variables.

Footnote. Standardized estimates are reported.
***. $p < .001$.

APPENDIX C

Figures and Tables for Introduction

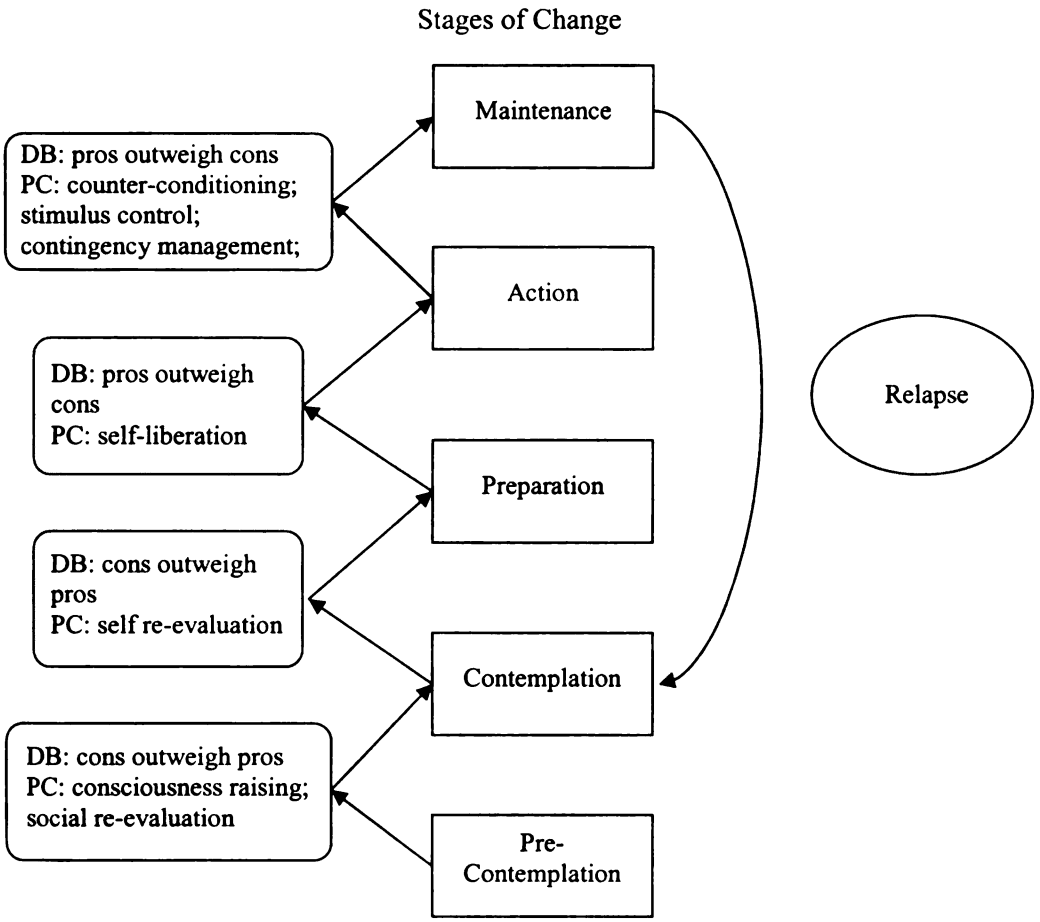


Figure C1. Trans-Theoretical Model of Behavior Change

Footnote. PC=Processes of change; DB=Decisional balance.

Table C1. MMPI-2 Validity Scales (Megargee, 2006).

Validity Scale	Description	Mean (Std. Dev.)	Cut-off
(In)Frequency (F)	Captures invalid profiles due to poor reading and/or comprehension; also detects exaggerating symptoms	59.49 (22.70)	≥ 100
Lie (L)	Detects those presenting themselves in an overly positive manner	57.26 (11.81)	≥ 80
Correction (K)	Empirically derived assessment of symptom minimization and positive impression management	51.49 (11.65)	≥ 80

Table C2. Description of MMPI-2 clinical scales (Butcher & Williams, 2000).

Subscale	Description
Hypochondriasis (scale Hs)	Individual endorses vague somatic symptoms
Depression (scale D)	Individual's subjective experience of dysthymia and associated symptoms (e.g., hopelessness)
Hysteria (scale Hy)	Measure of specific somatic symptoms, and socialization
Psychopathic Deviant (scale Pd)	Measure of maladjustment, family/authority concerns, alienation (from self and society), and boredom
Masculine/Feminine (scale Mf)	Assesses interests, hobbies, and other personality traits that may be common among men and women
Paranoia (scale Pa)	Assesses the degree to which an individual endorses being morally-driven, untrusting of others, and interpersonally aware
Psychasthenia (scale Pt)	Measures abnormal fears, trouble concentration, feelings of guilt, and self-criticism
Schizophrenia (scale Sc)	Assesses the degree to which an individual endorses bizarre thought processes, social isolation, poor judgment, and an unstable self-identity
Hypomania (scale Ma)	Measures mood elevation and instability, agitation, and racing thoughts
Social Introversion (scale Si)	Measure of social anxiety, isolation, and low self-esteem

Table C3. Processes of Change

Processes of Change	
Experiential Factor	**Description**
Consciousness raising	learning more about the problematic behavior and why it is problematic
Self-reevaluation	assessing the extent to which the problematic behavior fits with one's own values and sense of self
Social reevaluation	assessing how the problematic behavior affects those in the individual's environment
Self-liberation	recognizing one's self-efficacy
Dramatic relief	profound affective arousal regarding the problematic behavior
Behavioral Factor	**Description**
Social liberation	choosing to alter the environment
Counter-conditioning	recognizing and altering the triggers for the behavior
Stimulus control	altering the environment in such a way that the trigger is less likely to occur
Contingency management	being rewarded for making changes
Helping relationships	establishing emotionally intimate relationships with people who can support them

APPENDIX D

Additional Research Information on TTM

Processes of change

Processes of Change is another central construct of the TTM (represented as PC in Figure A; Prochaska & DiClemente, 1982, 1983; Prochaska & Prochaska, 1999). The authors propose ten components which they believe are essential to actually creating and supporting change in individuals. The Processes of Change construct includes five experiential factors (which are the cognitive and affective factors) and five behavioral factors. Both of these categories of factors are described in Table C3 of Appendix C.

The authors purport, and research supports, that the cognitive and affective processes described here are used earlier in treatment during the initial stages of motivation while the behavioral components are used in later stages of treatment and change. The cognitive and affective factors need to be established before the behavioral components can be implemented (Prochaska & DiClemente, 1983; Prochaska & Prochaska, 1999).

Assessing Processes of Change. No research was found concerning the measurement tools for the Processes of Change. This lack of research was not surprising given that these change factors are difficult to operationalize and directly assess (Tierney & McCabe, 2005). However, if the therapist judges the client to be progressing through stages, then it is likely that the client is successfully using at least some aspects of the processes of change.

Decisional Balance

The final construct of the TTM involves the concept of *Decisional Balance* (represented as DB in Figure A; Prochaska & DiClemente, 1982, 1983; Prochaska & Prochaska, 1999). This construct represents the relationship between individuals' understanding of the positive and negative consequences of the maladaptive behavior and their readiness to change. Decisional Balance involves the degree to which an individual can balance the advantages and disadvantages of continuing the maladaptive behavior. This construct is used throughout the course of treatment and in each stage of motivational development (Tierney & McCabe, 2005). However, the ratio of advantages to disadvantages changes significantly as the individual progresses from one stage to the next.

Assessing decisional balance. Decisional Balance construct is assessed through clinician interview (Prochaska & Prochaska, 1999; Tierney & McCabe, 2005). The therapist assists the client in developing lists of advantages and disadvantages to changing their maladaptive behavior in the beginning of treatment. As the client continues to enhance his motivation, he and the clinician develop lists of the advantages and disadvantages of challenging himself to continue to change. If the client is progressing well, the advantages will outweigh the disadvantages of change (Prochaska & Prochaska, 1999; Tierney & McCabe, 2005).

APPENDIX E

Psychopathology and Victim Status

In addition to implications for different levels of motivation to change, different psychopathology characteristics can also be associated with different offense characteristics, most notably, victim status. These offense characteristics may provide additional indices affecting motivation to change. Research comparing sex offenders against adults and sex offenders against children on various forms of psychopathology has shown consistent differences in the psychopathology components of these groups (Ahlmeyer et al., 2003). In a sample of approximately 8000 criminal offenders (695 sex offenders) who were administered the Millon Clinical Multiaxial Inventory-II, Ahlmeyer et al. (2003) found that sex offenders against children (n=472) had an affective psychopathology presentation (i.e., Cluster C personality disorders) while sex offenders against adults (n=223) had a disruptive behavior psychopathology presentation (i.e., Cluster B personality disorders). In their sample, 41% of sex offenders against children had high scores on the avoidant personality disorder scale (as opposed to 28% of sex offenders against adults) and 30% had high scores on the dependent personality disorder scale (as opposed to 17% of sex offenders against adults). Both of these disorders are Cluster C personality disorders which characterize individuals as being timid, overly anxious, and/or socially inept (APA, 2000).

On the other hand, compared to sex offenders against children, sex offenders against adults scored higher on all Cluster B personality disorders (i.e., Histrionic, Antisocial, Narcissistic, Borderline), though those results were not significantly different

from sex offenders against children (Ahlmeyer et al., 2003). Cluster B personality disorders typically characterize individuals as impulsive, callous, emotionally labile, disregarding of others, and/or self-centered (APA, 2000). These individuals also experience emotions, particularly anger, in a brief, intense yet superficial manner (APA, 2000), which may contribute to their impulsivity and aggression. In the Ahlmeyer et al. (2003) study, sex offenders against adults did not surpass sex offenders against children on any of the scales assessing Cluster A, Cluster C, or Axis I disorders (except Mania and Alcohol Dependence).

Empirical research has also indicated that sex offenders differ on mood disorders. For example, Ahlmeyer et al. (2003) found that their sample of sex offenders against children (n=472) had overall higher rates of affective disorders than did sex offenders against adults. Thirty percent of the sex offenders against children sample were high on dysthymia; 49% were high in anxiety disorders; and 6% on major depression. For sex offenders against adults, their highest Axis I score was 44% in anxiety followed by 35% in alcohol use disorders. Their rates on dysthymia were 18%; their rate of major depression was 2%. Ahlmeyer et al. (2003) concluded that, in terms of overall psychopathology, sex offenders against children were the most severely emotionally disturbed (i.e., internalized) and sex offenders against adults were more similar to non-sexual offenders who were more behaviorally disturbed (i.e., externalized). These results are consistent with the pattern of findings previously noted.

APPENDIX F

The URICA and Sex Offenders

In examining the use of the modified URICA with 36 incarcerated sex offenders against children, internal reliability was established for convicted sex offenders against children who were waiting to begin treatment as was test-retest reliability. Internal reliability ranged from .81 to .90; test-retest reliability ranged from .69 to .84. The following table provides the internal and test-retest reliability for each subscale:

Table F1: Reliability of URICA Subscales

Subscale	Internal reliability	Test-retest reliability
Pre-Contemplation	0.83	0.69
Contemplation	0.90	0.84
Action	0.81	0.80
Maintenance	0.89	0.70

In addition to those who were waiting to begin treatment, internal reliability (but not test-retest reliability) was also established for 47 incarcerated sex offenders against children who were already in treatment. These offenders were assessed at pre-treatment, mid-treatment, and post-treatment. The following table summarizes the internal reliability for this sample of sex offenders at each assessment period:

Table F2: Internal Reliability of URICA across Time

Subscale	Pre-treatment (n=47)	Mid-treatment (n=33)	Post-treatment (n=33)
Pre-Contemplation	0.80	0.81	0.89
Contemplation	0.84	0.78	0.85
Action	0.85	0.82	0.85
Maintenance	0.81	0.78	0.84

The construct validity of this scale was also assessed with both samples and revealed findings consistent with theoretical expectations. The Contemplation, Action, and Maintenance scales were all positively correlated with one another and negatively

correlated with Pre-Contemplation. This pattern of findings was the same in both sex offenders against children and sex offenders against adults. These findings suggest that those in the Pre-Contemplation stage have lower levels of motivation compared to those in the other three stages.

Finally, this study also considered the influence of social desirability on the participants' responses and, overall, found that it was not a factor in their answers. Some variation in socially desirable responding was evident but the authors concluded that these variations were not significant enough to warrant concern. An important finding from the Tierney and McCabe (2004) study is that the majority of the offenders were involved with the Pre-Contemplation process even though they had volunteered to participate in treatment. They surmised that this finding represents external motivations to attend treatment (e.g., more privileges in the housing units in prison), which is a common assumption in the sex offender literature.

APPENDIX G

Intervention Strategies Used in CBT with Sex Offenders

Behavior therapy. The ultimate goal of behavior therapy with sex offenders is to bring under control maladaptive sexual urges and behaviors. This intervention strategy arises from several theories suggesting that sex offenders cannot control their sexual impulses and use sexual gratification to fulfill a variety of emotional and psychological needs (Ward & Beech, 2006). This intervention ironically does not directly address the "maladaptive sexual behaviors" of rape and assault; instead, the focus is on behaviors that may *increase the risk* of rape or assault of an individual, such as downloading inappropriate sexual material on the internet and using the material to masturbate. Behavioral interventions addressing these impulses vary and include masturbatory reconditioning techniques, electrical aversion, and covert sensitization, to name only a few (Abel et al., 1992). Retraining sex offenders to more appropriately feel and satisfy their sexual urges promotes responsible sexuality and reduces one of the driving forces behind sexual aggression.

Prosocial skills training. The goal of prosocial skills training is to increase those behaviors which may help sex offenders to better function in society and create a sense of self-efficacy. Sex offenders often have difficulty initiating and continuing conversations, expressing their emotions in a healthy manner, and engage effectively with others (Abel et al., 1992). These deficits decrease their social bonds with others and increase the risk for offending as they search for a means to achieve intimacy and fulfill their emotional needs (Ward & Beech, 2006). These techniques typically include *social skills training*,

which involves teaching offenders, who typically lack proper social skills, general strategies to initiate and maintain conversations and positive interactions with others (mainly those of the opposite sex?). Also included in prosocial skills training is *assertiveness training*, which involves developing the skills to successfully express both positive and negative emotions and thoughts (Abel et al., 1992), potentially reducing the frustration that often precedes sexual offending (Ward & Beech, 2006). Finally in this training, sex offenders, who typically are naïve to matters of the human anatomy, engage in *sex education/sexual dysfunction* treatment which teaches them the basic knowledge of sexual health and the process to obtaining healthy sexual relationships (Abel et al., 1992). Together, these elements ready the sex offender for release into the community with new ways of interacting with others and new knowledge of the appropriateness of their thoughts and behaviors, increasing the likelihood of positive interactions with others and decreasing the need to offend.

Restructuring distorted cognitions and developing victim empathy. Cognitive distortions (e.g., sex with children is not harmful; women always play hard to get) are often used as a justification for sex offenders' actions and help to neutralize their negative affect after committing a sex crime (Hanson, Cox, & Woszczyna, 1991). Because these cognitions perpetuate their offense behaviors, the goal of *cognitive restructuring* is to identify and reframe these distorted cognitions while creating more adaptive belief systems (Abel et al., 1992). Clinicians generally hold that using CBT skills to modify these distorted cognitions will result in decreased recidivism as it allows for their sexual offenses to become more ego-dystonic. Similarly, the development of *victim empathy* is viewed as a method for reducing recidivism as it makes offenders more aware of the

consequences of their actions, which they often deny or minimize. Intervention strategies for this aspect of treatment include sex offenders watching videotapes of sexual assault victims talk about their trauma and/or sex offenders writing the details of the assault from the perspective of their victim (Abel et al., 1992).

Relapse prevention. This final aspect of the treatment is one of the most important as it teaches offenders how to anticipate and cope with potential relapses. The specific components of relapse prevention are extensive and thus are only briefly described here. In brief, this technique includes a variety of psychoeducational (e.g., linking emotions to behavior; sex education), behavioral (e.g., avoidance strategies; programmed coping mechanisms), and cognitive (e.g., identify and analyze maladaptive thoughts) elements that teach the offenders how to recognize triggers of a relapse (e.g. an affect shift) and intervene on their own behalf (e.g., via effective coping mechanisms). Mastery of this step is one of the key elements of reducing recidivism (Abel et al., 1992).

APPENDIX H

Motivational Interviewing

Motivational interviewing parallels the TTM described earlier. Both approaches assume that clients have varying levels of motivation to change when they begin treatment and this motivation continues to oscillate throughout the treatment process (Arkowitz & Miller, 2008). Further, both approaches recognize and accept ambivalence as a central part of the change process that needs to be addressed throughout treatment in order to continue the client's progression (Arkowitz & Miller, 2008).

Motivational interviewing is composed of four basic principles or assumptions. The first principle is expressing empathy for the client (Arkowitz & Miller, 2008). For the therapist, this would involve trying to understand the client's point of view and the circumstances which may be influencing the client's behaviors. While it may seem obvious that a therapist needs to have empathy for a client, expressing empathy may be difficult to do when therapists are working with sex offenders (Mann, 1996 as cited in Ginsburg et al., 2002). When working with offender populations it can sometimes be difficult to find a balance between expressing empathy for the client and condoning their actions, especially when the client is pulling for the therapist to condone their actions. Thus, therapists may err in favor of being less empathic so as to not convey the wrong message to the offender or they may have a bias against the sex offender because of their offense, making empathy building difficult (Farbring & Johnson, 2002). However, using empathy in motivational interviewing does not involve condoning the clients' offenses but instead assumes that using empathy in a nonjudgmental manner creates a safe

environment in which the client can begin thinking critically about his behavior (Arkowitz & Miller, 2008; Mann, 1996 as cited in Ginsburg et al., 2002).

The second assumption of motivational interviewing is that motivation can be influenced through creating cognitive dissonance between the client's values and behaviors (Arkowitz & Miller, 2008). As the therapist gathers more information about the client, she is able to generate discrepancies between the clients' values (e.g., hurting children is wrong) and their behaviors (e.g., sexually assaulting a child). She can then reflect those discrepancies back to the client in an empathic, nonjudgmental manner. It is assumed in motivational interviewing that the cognitive dissonance created in these situations will motivate the client to want to align his behaviors with his values and begin to change (Arkowitz & Miller, 2008).

The third principle of motivational interviewing involves the therapist tolerating resistance and ambivalence about change (Arkowitz & Miller, 2008). The assumption of motivational interviewing is that ambivalence represents the client vacillating between changing and not changing. Thus, if the therapist has even a small indication that the client may be interested in change then she can use other therapeutic techniques (e.g., worksheets on advantages and disadvantages of change) to engage the client in conversations about change. The final principle of motivational interviewing is encouraging self-efficacy (Arkowitz & Miller, 2008). Encouraging self-efficacy is especially important when considering the culture of a criminal, which often involves being constantly reminded on their poor decision-making as well as being told what they should and should not do (Mann, 1996 as cited in Ginsburg et al., 2002). These controlled boundaries were implemented in order to keep the public safe and perhaps

unintentionally communicates to the offender that he has no control in his life anymore. This feeling can negatively affect clients' self-efficacy and self-esteem, as they may believe they are not able to take care of themselves or change their own behaviors (Mann, 1996 as cited in Ginsburg et al., 2002).

One advantage of these approaches and motivational interviewing more generally is that it is an individual, client-centered approach. This is an advantage because group therapy is often the format chosen for sex offenders (Barker & Beech, 1993). In group therapy, sex offenders may not feel as open to discussing their thoughts and concerns about change because of pressure from other offenders to maintain a tough exterior (Ginsburg et al., 2002). Also, sex offenders have a tendency to deny their offenses as a way of reducing the cognitive dissonance between their values and behaviors (Mann, 1996 as cited in Ginsburg et al., 2002). This type of denial interferes with the development of motivation to change but cannot be addressed in much depth during the typical group therapy process because of the need to not individualize group therapy (Mann, 1996 as cited in Ginsburg et al., 2002). Thus having an individual therapy approach that can be used to help the offender focus only on motivation to change may be beneficial to his ability to engage in other forms of therapy.

Another advantage of motivational interviewing is that it may be used as its own, individual treatment or be used in conjunction with other treatment approach. Meta-analytic results of non-criminal populations have found that using motivational interviewing as a pre-treatment approach has led to larger effect sizes in treatment responses and longer-lasting change results (Arkowitz & Miller, 2008). Though this study was not conducted in sex offenders specifically, it could be the case that treatment

responses would be enhanced if motivational interviewing was combined with cognitive-behavioral therapy, which is the preferred method of treatment for sex offenders currently (Barker & Beech, 1993). The typical cognitive behavioral treatment program with sex offenders begins with directly challenging the sex offenders' denial of and justification for the offense (Beech & Fisher, 2002), which may cause some offenders to become defensive and respond negatively to the approach (Kear-Cowell & Pollack, 1997). They may actually disengage from treatment and, if they continue in the program, may only do so because of the negative consequences they may face if they discontinue treatment (Ginsburg et al., 2002). Having a pre-treatment where motivation is enhanced is postulated to improve the sex offenders' understanding of themselves and the treatment process and makes them more receptive to the challenges associated with change (Mann, 1996 as cited in Ginsburg et al., 2002).

APPENDIX I

Sampling Procedures

Ten files from each of the years proposed in for analysis (i.e., 2000-2005) were randomly selected for a total of 60 files explored. To ensure randomness, a storage box containing the files was randomly chosen from among the piles of boxes and 5 sex offender files were chosen randomly from that box. Each file was examined and categorized as *usable* or *unusable*. *Usable* files were those which contained all of the measures needed for the study and may or may not have had items missing on those measures. *Unusable* files were those which had at least one measure completely missing from the file. In addition to the actual measures that were needed for the study (e.g., URICA), additional information on the type of crime committed (and a description of the crime if available) and victim status was also collected. This information was included into the decision of determining a file as usable or not (i.e., if the type of crime or victim status information was missing, then the file was counted as missing, regardless of if the remaining measures were available).

The following table summarizes the results from this data sampling:

Table I1: Summary of Usable Files

Usable files		
Utility rate (defined as all data present)	50%	N=352
Contact offenders	75% (of 352)	264
Adult victims	25% (of contact offenders)	66
Child victims	75% (of contact offenders)	198
Non-contact offenders	25% (of 352)	88

Table I2: Utility Rate of Files Per Year

Utility rate per year (i.e., % of files per year with no missing data)		
2000	20%	N=20
2001	40%	42
2002	60%	74
2003	40%	48
2004	70%	92
2005	70%	83

Table I3: Estimates of Missing Data

Degree of missing data	projected	N's
Missing 1 measure	33%	N=116
Missing 2 measures	37%	130
Missing 3 measures	27%	95
Completely missing	3%	11

Overall, if the results from this sampling are extrapolated to the entire 703 sex offenders enrolled in the program from 2000-2005, then the 50% utility rate would yield approximately 352 offenders with complete files (albeit, some may have data missing at an item level). If only contact offenders are used in this study, then the sample size would be 264. If those missing only the URICA were included, then the total N would raise. It is not known how many URICA's are missing at this time; thus, the exact increase in N if the URICA's are imputed cannot be calculated at present.

With regard to the representativeness of the complete data files relative to the rest of the files, the following table of correlations indicates that missingness does not form patterns in the data based on offense characteristics or motivation to change scores: none of these correlations are significant.

Table I4: Correlations of Missing Data

	Missingness		
(N=55)	Supervision status	Offense type	Victim status
URICA	-.058	.057	-.037
MMPI	-.025	.030	-.162
Attendance	.012	-.179	.049
Completion	-.058	-.142	-.275
Personal history	.017	-.237	.063

Total sample size. At the time of this study's proposal approval, there are 250 offenders in the dataset who meet the criteria for the study (i.e., contact offenders with complete data). These data were obtained through a similar procedure used to obtain the sample data just described. First, the MMPI-2 data were obtained for the offenders enrolled in the treatment facility from 2000-2005. The client numbers associated with these data were then matched to the client files at the treatment facility which housed the rest of the data. If an offender whose MMPI-2 data are complete also was a contact offender, completed the URICA, and had the other offense characteristics data in their files, their client number was given a checkmark on a computer print out of the client numbers. This process was continued until 250 offenders had checkmarks by their names. There are still more files to go through; thus, this 250 will increase by about 15 or 20 offenders for the final analyses. However, due to time constraints, all of the available files could not be explored.

APPENDIX J

Description of MMPI Scales Used in Present Study

Utility of MMPI-2 in present study

The two MMPI-2 components of interest for this study were the validity and clinical scales. The research regarding each is briefly described next. Included with the description of each scale and the rationale for its use in the study is the rate of occurrence of clinically significant elevations of that scale (i.e. t-scores greater than 65; Megargee, 2006) as well as its correlation with content scale TRT. Content scale TRT is a measure of *negative* attitudes towards treatment and difficulty changing behavior patterns (Butcher & Williams, 2000). Therefore, the higher this t-score, the more difficulty these individuals have with accepting help and making difficult changes in their lives. It is a scale which appears to parallel the motivation to change construct explored in this study. Including the correlations with this scale will assist in strengthening the rationale for including each scale in the analyses.

MMPI-2 validity scales

With sex offender populations, the MMPI-2's validity scales have shown convergent validity with other measures of minimization, denial, exaggeration, and cognitive distortions such as the Multiphasic Sex Inventory (Haywood, Grossman, Kravitz, & Wasyliw, 1994; Schlank, 1995). These results suggest that the MMPI-2 validity scales had valid use in the current sample of sex offenders, assuming that their validity scales did not indicate an invalid profile, in which case the file would have to be removed. (Details regarding how validity was determined are provided in the Data Entry

section below). Of the eight possible validity scales, only three scales were consistently present in all of the archival data collected for the study—Scales F, L, and K. Of these, Scales F and K were included in the cluster analyses, while Scale L was used to help determine the validity of the individual's MMPI profiles. Scale F was used to detect negative impression management (i.e., malingering or exaggeration of symptoms; Megargee, 2006). Scale K was used to detect self-deception, which is a type of positive impression management (i.e., unconscious and protective minimization of symptoms; Megargee, 2006). Research suggests that sex offenders may engage in denial and exaggeration of symptoms to fulfill self-serving intentions (Lanyon, 2001), which may make their psychological presentations difficult to interpret.

Scale F. Scale F was chosen as the exaggeration measure for this study because it appeared to be the most relevant validity scale which could assess externalizing behaviors such as the exaggeration of symptoms (Butcher & Williams, 2000). It also was one of the validity scales which clustered in previous research (e.g., Duthie & McIvor, 1990; Kalichman et al., 1989, 1992). In criminal samples, 49% had t-score elevations from 65-80 on scale F; 46% had t-score elevations above 80 (Megargee, 2006). Symptom exaggeration could be seen as a form of manipulation or self-serving behavior (Lanyon, 2001). Research supports the notion that scale F may be an externalizing variable and has shown that, in college students, scale F positively correlated with scales Pd, Ma, and ANG of the MMPI-2 (O'Laughlin & Schill, 1994). In criminal samples, scale F correlates positively with TRT in the .80 range (Megargee, 2006). Therefore, as symptom exaggeration increases, negative attitudes about treatment and lack of

motivation to change also increase. This correlation suggests that motivation to change may be less genuine in offenders with elevations on this scale.

Scale K. Scale K detects positive impression management that is more defensive than instrumental (Megargee, 2006). Part of its original purpose was to detect the suppression of psychological problems in those who had genuine psychological problems (Butcher & Williams, 2000). In criminal samples, 20% had t-score elevations between 65 and 80 for scale K, placing them in clinically significant yet interpretable ranges (Megargee, 2006). Less than 1% of these criminals had t-score elevations above 80. This scale correlates negatively with TRT in the .70 range (Megargee, 2006). Therefore, as symptom suppression increases, negative attitudes toward treatment decrease presumably because the offender does not think that he has many problems to change since he is suppressing his symptoms. While it may appear that this would result in higher levels of motivation to change, high scores on scale K may actually manifest as higher Pre-Contemplation scores, which assesses the self-perceived need to change. The type of minimization that scale K detects may significantly influence a participant's actual desire to change his behavior, which is why it seemed appropriate to include in the present study.

Excluded validity scales. Scale L was excluded from the cluster analyses because it was not as consistently elevated in the previously reviewed MMPI clustering studies as Scales F and K. Scale L was used in determining profile validity as it is a measure of positive impression management (Butcher & Williams, 2000; Megargee, 2006). It also can reflect a nay-saying response set on the questionnaire that is not associated with intentional deception. Examining this score in conjunction with other validity scores

(i.e., TRIN; see Table C1 of Appendix C) helps to determine which tendency an elevated L is reflecting: positive impression management or non-acquiescence. Unfortunately, the TRIN score was not available for all offenders in this sample; thus, the L score had to be interpreted as a single scale using that guide that t-scores greater than or equal to 80 are not interpretable in correctional samples (Megargee, 2006).

MMPI-2 clinical scales

The 10 clinical scales of the MMPI-2 are each conceptually associated with a specific domain of psychopathology (Butcher & Williams, 2000). These scales are used to determine the profile and level of psychopathology an individual is experiencing. In the present study, the clinical scales of interest were D, Pd, Mf, Pa, Pt, Sc, and Ma.

Scale D. This scale (a measure of depressive symptoms; Butcher & Williams, 2000) was included in accordance with the literature suggesting that depression rates in sex offenders (35%; Stinson et al., 2005) are higher than in the general population (6.7%; Kessler et al., 2005). Scale D has been shown to positively correlate with other internalizing measures (e.g., Beck Depression Inventory) in a sample of college students (Ben-Porath et al., 1993) and is a common feature of criminal offenders (Megargee, Mercer & Carbonell, 1999). In fact, scales Pd and D are the second most commonly elevated pair of scales in criminal samples (Megargee et al., 1999). For scale D alone, 20% of criminal offenders show t-score elevations greater than or equal to 65 (Megargee, 2006). This scale also correlates in the .60 range with content scale TRT (Megargee, 2006). The pessimistic cognitive style often associated with depression (Beck, 1995) may explain the relatively high correlation between scales D and TRT as these individuals may think they will not succeed in treatment or benefit from it.

Scale Pd. Scale Pd is an assessment of antisocial characteristics and behaviors (Megargee, 2006). The most commonly elevated pair of MMPI-2 subscales in criminal populations is scales Pd and Ma, though it only occurs in 13% of criminal populations (Megargee et al., 1999). For scale Pd alone, 35% of male criminals have elevations at or above a t-score of 65 (Megargee, 2006). This scale was chosen for this study not only because it captures antisocial behaviors but also because of its consistent presence in both sexual and nonsexual offender samples (Butcher & Williams, 2000). It also is positively correlated (in .50 range) with content scale TRT (Megargee, 2006). In the present study, individuals with higher t-scores on scale Pd may have lower levels of motivation to change, consistent with this correlation analysis.

Scale Mf. This scale was originally developed to detect homosexual tendencies in individuals (Megargee, 2000). As such, it is coded differently in males and females with high scores in males indicating more "feminine" tendencies and high scores in females indicating more "masculine" tendencies. In male criminal samples, only 3% of them had t-score elevations at or above 65 on this scale, indicating that only a few of them have "feminine" tendencies. Instead, 40% of the male criminal sample has t-scores below 40 (Megargee, 2006). For males, t-scores below 40 on this scale are indicative of aggressive behavior, callousness, and stereotypical masculine interests. Duthie and McIvor (1991) and Kalichman et al. (1992) both found clusters of sex offenders in their studies with elevations on Scale Mf, indicating low levels of masculine behaviors. In criminal samples, Mf did not correlate (positively or negatively) with scale TRT or any other of the MMPI-2 scales (Megargee, 2006). However, one could hypothesize that sex offenders would have low t-scores on this measure (i.e., more masculine traits) if they are

sexually abusing women and thus asserting a masculine power over the women. They also could have scores within normal ranges as in one of the MMPI clustering studies (Kalichman et al, 1989). As for sex offenders against children, they may have elevations on this scale (i.e., low masculine characteristics) consistent with previous studies (Duthie & McIvor, 1991; Kalichman et al., 1992) or scores within normal ranges as with Shealy et al. (1990).

Scale Pa. Scale Pa includes content which assesses not only distrust of others but also more disturbed thought patterns and beliefs (Megargee, 2006). This scale has been found to be one of the most commonly elevated scales in criminal samples (Megargee et al., 1999), with 25% of criminal offenders having elevations at or above a t-score of 65 (Megargee, 2006). This scale has correlations in the .70 range with scale TRT (Megargee, 2006), indicating that some feature of this trait (e.g., perhaps a mistrust of the therapist) is interfering with these individuals' desire or willingness to change their behavior.

Scale Pt. This scale is a measure of intense anxiety about a variety of situations and circumstances (Butcher & Williams, 2000). Quayle et al. (2006) has found that sex offenders tend to experience higher levels of anxiety, which is consistent with findings from other studies (e.g., Stinson et al., 2005). Because of these findings, scale Pt was included, as it is a measure of persistent generalized anxiety. In male criminal samples, 21% had t-score elevations greater than or equal to 65 (Megargee, 2006). This scale correlates in the .70 range with scale TRT (Megargee, 2006), suggesting that anxiety may be a hindrance to engaging in treatment.

Scale Sc. Scale Sc is a measure of disturbed thought processes, social isolation, and poor judgment (Butcher & Williams, 2000). Early research with the original MMPI found that scales Pa and Sc were frequently elevated in sex offenders against adults (Erikson et al., 1987). However, the research seeking to use this scale to distinguish sex offenders from nonsexual offenders has been inconsistent at best (Kalichman et al., 1989). It is still possible that some sex offenders have social isolation and disturbed thought processes. Indeed, the rate for thought disorders is four times as high in sex offenders (4%) as in nonsexual offenders (1%; Ahlmeyer et al., 2003). In criminal offenders, 23% had t-score elevations above 65; this scale was also correlated with scale TRT in the .70 range (Megargee, 2006). Though there is some doubt about its applicability in the current study due to the mixed sample of sex offenders against adults and sex offenders against children, because of the potential severity of this scale in this population, it was included in the analyses.

Scale Ma. Scale Ma is a measure of hypomania symptoms (e.g., impulsivity; Butcher & Williams, 2000). Thirteen percent of criminal offenders have t-score elevations at or above 65 on this scale (Megargee, 2006). It is most commonly elevated with scale Pd and the two of them together are the most commonly occurring two-point MMPI-2 elevation in criminal offenders (Megargee et al., 1999) and second most common two-point elevation in sex offenders with nonsexual criminal histories (Erickson et al., 1987). It is theorized that elevations on scales Pd and Ma together are indicative of sex offenders being impulsive and risk-takers (Butcher & Williams, 2000). These personality qualities may place them in situations where they are more likely to commit crimes. Surprisingly, this scale was not correlated above .50 with scale TRT (Megargee,

2006). Given the notion that the individuals with higher t-scores on Scale Ma enjoy the impulsivity and stimulation associated with hypomania symptoms (e.g., Butcher & Williams, 2000), one would expect that they would be resistant to change. The low correlation with Scale TRT suggests that, in the present study, people with higher scale Ma t-scores may have a pattern of motivation signifying indifference to change.

Excluded clinical scales. Scales Hs, Hy, and Si were not included in the analyses for this study. The central reason for their exclusion is that these variables did not consistently emerge as significant in previous clustering studies, thus, indicating that these variables may not be key domains in sex offenders' pathologies.

The following chart summarizes the use of the MMPI-2 scales in the cluster analyses:

	MMPI-2 subscales
Validity scales	F, K
Excluded validity scales	L
Clinical scales	D, Pd, Mf, Pa, Pt, Sc, Ma
Excluded clinical scales	Hs, Hy, Si

APPENDIX K

Cluster Analysis: Background

Hierarchical Cluster Analysis

Hierarchical procedures involve creating clusters based on the similarities and/or differences between individual cases (Hair & Black, 2000). There are two types of hierarchical procedures: divisive and agglomerative. In the divisive procedure, the whole sample is consider one cluster and then each individual case is separated from the cluster to form smaller clusters based on the high within-group similarity and low between-group differences. The agglomerative approach works in the opposite direction. Here, each case is considered a cluster and these clusters are grouped with each other based on within-group and between-group means. With both divisive and agglomerative approaches, clusters are nested rather than mutually exclusive groups.

In the hierarchical method, several approaches could be used to determine how the cases should be "linked" with one another as the clusters are formed (Rapkin & Luke, 1993). These approaches include single linkage, complete linkage, average linkage, and Ward's method. The first three linkage methods focus on linking the cases based on their similarity of one case to another case in a particular cluster. The similarity can be defined as the single case being most similar to a case in a cluster (i.e., single linkage), least similar to a case in a cluster (i.e., complete linkage), or the average similarity being the single case and all of the other cases in the cluster (i.e., average linkage; Rapkin & Luke, 1993). In the final method, Ward's method, the focus in assigning cases to a cluster is on maximizing between-group heterogeneity and minimizing within-group

heterogeneity rather than on matching a single case to the overall cluster. Therefore, the resulting clusters are more balanced and better answer the research question (Rapkin & Luke, 1993). Since Ward's method will result in the most homogenous clusters (within-group), this method was used in the present study to determine proximity in the clusters.

The hierarchical method has both advantages and disadvantages for use in this study. One suggested advantage of the hierarchical approach is that each individual case is considered a cluster and each of these clusters is grouped based on its individual characteristics (Hair & Black, 2000). This more person-centered approach more closely fits the general benefit of cluster analysis as being an exploration of natural relationships. One potential drawback to the hierarchical approach is that it is sensitive to the presence of outliers and inappropriately-chosen clustering variables (i.e., irrelevant clustering variables) in the data, which could lead to the false creation of clusters (Hair & Black, 2000). Because of this, it may be necessary to run the analyses several times and, each time, delete undesirable cases which may be offsetting the results. Because of its strengths and weaknesses it may be necessary to use another type of approach in order to obtain the best results.

Iterative Cluster Analysis

The iterative approach involves assigning cases to a particular cluster based on the researcher's predetermined specification of the number of clusters and the "cluster seed" (i.e., the mean of all cluster variables for each individual randomly assigned in the first clustering attempt) expected in the sample (Hair & Black, 2000; Luke, 2005; Rapkin & Luke, 1993). The iterative approach then involves matching the case's mean values on the clustering variables to the most similar cluster seed until the best clusters are created

based on the number of pre-specified clusters. Any of the four above linkage methods can be employed here in order to assign cases to the appropriate clusters. The added advantage of this approach is that it allows cases to be reassigned to clusters (Rapkin & Luke, 1993). The cluster seeds are recalculated when new cases are added, after which cases may be reassigned to different clusters if their means better match the new mean of another cluster. The result is a set of more homogeneous (within-group) clusters (Rapkin & Luke, 1993). While the advantage to this approach is that it allows cases to be reassigned to other clusters, the disadvantage of this approach is that the researcher has to pre-select the clusters (Hair & Black, 2000; Rapkin & Luke, 1993), which can be difficult if little is known theoretically about how the sample would cluster, as in the present study.

Combined Approach

It is possible to use both types of cluster analyses in a given study (Hair & Black, 2000). The hierarchical procedure is used first to establish the appropriate number of clusters for the data, the exact cluster seeds for each of those clusters, and identify the outliers. The iterative approach is then used to assign each case to the appropriate cluster based on its means on the clustering variables. The benefit of this approach is that it combines the advantages of both approaches and the advantages of one approach counters the disadvantages of the other approach (Hair & Black, 2000). For example, the major disadvantage of the iterative approach is that the researchers must carefully choose the approach for determining the clustering seed, and one disadvantage of the hierarchical approach is that the clusters are nested in each other rather than mutually exclusive. When these approaches are combined, the hierarchical approach creates the cluster seeds

for the researcher based on the best fit of the data (which addresses the disadvantage of the iterative approach) and the iterative approach takes the cluster seed information to create mutually exclusive clusters which fit the data the best (which addresses the disadvantage of the hierarchical approach).

APPENDIX L

Post-Hoc Analyses for Predictors of Motivation to Change

A final set of regression analyses was run to identify which factors in this study predicted motivation to change. Four regression analyses were run. The first regression included the individual MMPI clustering variables (rather than the cluster membership categories) predicting motivation to change. Results indicated that scales K and Mf were significant predictors of motivation to change but none of the other MMPI scales were (see Table J1). The model accounted for 11% of the variance in motivation to change. These results are particularly interesting considering that these are the two variables which did not seem to contribute to the structure of the clusters and were considered for removal from the analyses. The beta for scale K was negative, indicating that as symptom suppression decreases, motivation to change increases. The directionality of this scale is appropriate and suggests that as offenders begin to become more familiar with their psychological problems and their psychological defenses are beginning to dissolve they become more willing to work on their problems. The beta for scale Mf was positive, indicating that as stereotypical feminine tendencies increase,[23] motivation to change increases. Males with high scores on Mf tend to be more emotionally sensitive (Megargee, 2006). This sensitivity may help the offender to be more emotionally attune to their own feelings of guilt and shame for the crimes that they have committed. Guilt and shame have been hypothesized to be important factors in helping clients make and sustain behavioral change in their lives (Tierney & McCabe, 2005).

[23] Scale Mf is scored such that higher scores indicate more stereotypical feminine behaviors in males. Lower scores, on the other hand, indicate more stereotypical masculine behaviors in males (Butcher & Williams, 2000).

The second regression run used the offense characteristics as predictors of motivation to change. Results indicated that victim's age and supervision status were both significant predictors of motivation to change (see Table J2). This model accounted for 35% of the variance in motivation to change. The beta for victim's age was negative, indicating that as the victim's age decreases, motivation to change increases. This finding may indicate that offenders with child victims have a higher sense of guilty for their actions and are more motivated to change. It is also possible that offenders with child victims feel societal pressures to stop offending. Thus they may self-report higher levels of motivation to change but may not have an actual genuine interest in changing. Supervision status was also a significant predictor of motivation to change. The beta was positive. Since supervision status is dichotomized (i.e., probation or parole), this result indicates that those offenders who are on parole are more motivated to change. This finding is interesting because the offenders on parole constitute a minority in the dataset (N=84) but they have spent a significantly longer amount of time in jail or prison (mean=72.83 months) than the probationers (mean=7.11 months; $F(1, 219) = 241.41$; $p < .001$). Since many of these offenders begin this treatment program shortly after they have been released from prison, it is possible that they are reporting being motivated to change because they have a new appreciation for their freedom and not necessarily because they want to follow societal norms.

The third cluster tested which clinical variables were predictors of motivation to change (see Table J3). Results indicated that only the post-denial score was a significant predictor of motivation to change. This model accounted for 21% of the variance in motivation to change. The beta for denial was negative, indicating that as denial

decreases, motivation not change increases. Tierney and McCabe (2005) proposed that sex offenders' use of cognitive distortions to justify their behaviors may keep them from developing high levels of motivation to change because they do not necessarily view their behaviors as negative. This regression result offers some support for this notion.

The final regression analysis combined the statistically significant MMPI scales (i.e., scales K and Mf), offense characteristics (i.e., victim's age and supervision status), and clinical variables (i.e., post-denial score) into one regression predicting motivation to change. These variables were combined to determine which types of variables accounted for the most variance in motivation to change. Therefore the variables were entered as blocks with scales K and Mf in the first block; supervision status and victim age in the second block; and post-denial score in the third block. Results indicated that each variable maintained its significance in the final model, which accounted for 40% of the variance in motivation to change (see Table J4). The results also indicated that the model gained the most variance when the offense characteristics were added to the model (27%). The MMPI scales together accounted for approximately 8% of the variance and the post-denial score accounted for approximately 6%. These five variables seem to be the most robust in predicting motivation to change in this sample of sex offenders. However, the results are mixed regarding whether these characteristics predict genuine motivation to change or are reflective of underlying ulterior motives of the clients.

Table L1. Regression for Psychopathology Predicting Motivation to Change.

Variable	B	SE B	ß
MMPI F	0.02	0.01	0.12
MMPI K	-0.04	0.02	-0.14*
MMPI D	0.01	0.02	0.02
MMPI Pd	0.03	0.02	0.12
MMPI Mf	0.06	0.02	0.21**
MMPI Pa	-0.02	0.02	-0.0
MMPI Pt	0.01	0.02	0.02
MMPI Ma	-0.02	0.02	-0.09

Note. $R^2 = 0.11$.
*p<.05.
**p<.01.

Table L2. Regression for Offense Characteristics Predicting Motivation to Change.

Variable	B	SE B	ß
Offense Type	-0.14	0.18	-0.06
Penetration	-0.18	0.36	-0.03
Alcohol at Offense	0.69	0.39	0.13
Drugs at Offense	0.17	0.43	0.03
Victim Status	0.35	0.62	0.05
Victim Gender	-0.50	0.03	-0.05
Victim Age	-0.07	0.03	-0.19*
Relationship to Victim	0.09	0.11	0.06
Supervision Status	2.43	0.57	0.46***
Prison Time	0.00	0.01	-0.01
Prior Adult Offenses	0.48	0.37	0.09
Juvenile Record	-0.23	0.43	-0.04

Note. $R^2 = 0.35$.
*p<.05.
***p<.001.

Table L3. Regression for Clinical Variables Predicting Motivation to Change.

Variable	B	SE B	ß
Attendance Record	-0.02	0.03	-0.05
Requirements Complete	-1.62	2.55	-0.26
Pre-Treatment Score	0.03	0.14	0.04
Post-Treatment Score	0.16	0.16	0.46
Clinical Change	0.01	0.16	0.01
Pre-Denial Score	-0.28	0.34	-0.17
Post-Denial Score	-0.73	0.37	-0.54*
Denial Change	0.01	0.38	0.01

Note. $R^2 = 0.21$.
*p<.05.

Table L4. Modified Regression for Psychopathology, Offense Characteristics, and Clinical Variables Predicting Motivation to Change.

Variable	B	SE B	ß
MMPI K	-0.04	0.02	-0.15*
MMPI Mf	0.05	0.02	0.16**
Victim Age	-0.06	0.02	-0.15*
Supervision Status	2.18	0.32	0.42***
Post-Denial Score	-0.33	0.08	-0.25***

Note. $R^2 = 0.40$.
*p<.05.
**p<.01.
***p<.001.

REFERENCES

Adams, D. B. (2002). Summary of state sex offender registries, 2001. *Bureau of Justice Statistics Fact Sheet* Retrieved April 14, 2006.

Ahlmeyer, S., Kleinsasser, D., Stoner, J., & Retzlaff, P. (2003). Psychopathology of incarcerated sex offenders. *Journal of Personality Disorders, 17*(4), 306-318.

Ahrens, C. E., Dean, K., Rozee, P.D., & McKenzie, M. (2008). Understanding and preventing rape. In *Psychology of Women: A Handbook of Issues and Theories (2nd Ed.)*. F. L. Denmark & M. A. Paludi (Eds.). Westport, CT: Praeger Publishers/Greenwood Publication Group, pp. 509-554.

American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision*. Washington, D.C.: American Psychiatric Association.

Anderson, W. P. & Kunce, J. T. (1979). Sex offenders: Three personality types. *Journal of Clinical Psychology, 35*, 671-676.

Arkowitz, H., Westra, H. A., Miller, W. R., & Rollnick, S. (2008). *Motivational Interviewing in the Treatment of Psychological Problems*. New York, NY: The Guilford Press.

Bard, L. A., Carter, D. L., Cerce, D. D., Knight, R. A., & et al. (1987). A descriptive study of rapists and child molesters: Developmental, clinical, and criminal characteristics. *Behavioral Science & the Law, 5*(2), 203-220.

Baer, R. A., & Miller, J. (2002). Underreporting of psychopathology on the MMPI-2: A meta-analytic review. *Psychological Assessment, 14*(1), 16-26.

Barbaree, H. E., & Marshall, W. L. (1991). The role of male sexual arousal in rape: Six models. *Journal of Consulting and Clinical Psychology, 59*, 621-630.

Barrett, M., Wilson, R. J., & Long, C. (2003). Measuring motivation to change in sexual offenders from institutional intake to community treatment. *Sexual Abuse: A Journal of Research and Treatment, 15*(4), 269-283.

Bassarath, L. (2001). Neuroimaging studies of antisocial behavior. *Canadian Journal of Psychiatry, 46*(8), 728-732.

Ben-Porath, Y. S., McCully, E., & Almagor, M. (1993). Incremental validity of the MMPI-2 content scales in the assessment of personality and psychopathology by self-report. *Journal of Personality Assessment, 61*(3), 557-575.

Beyko, M. J., & Wong, S. C. P. (2005). Predictors of treatment attrition as indicators for program improvement not offender shortcomings: A study of sex offender treatment attrition. *Sexual Abuse: A Journal of Research and Treatment, 17*(4), 375-389.

Blanchard, K. A., Morgenstern, J., Morgan, T. J., Labouvie, E., & Bux, D. A. (2003). Motivational subtypes and continuous measures of readiness for change: Concurrent and predictive validity. *Psychology of Addictive Behavior, 17*(1), 56-65.

Boulet, J., & Boss, M. W. (1991). Reliability and validity of the Brief Symptom Inventory. *Psychological Assessment, 3*(3), 433-437.

Bowman, K. M. (1938). The challenge of sex offenders: Psychiatric aspects of the problem. *Mental Hygiene, 22*, 10-20.

Brogan, M. M., Prochaska, J. O., & Prochaska, J. M. (1999). Predicting termination and continuation status in psychotherapy using the Trans-theoretical model. *Psychotherapy, 36*, 105-113.

Brown, S. (2005). *Treating Sex Offenders: An Introduction to Sex Offender Treatment Programmes*. United Kingdon: Willan Publishing.

Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegan, A., & Kaemmer, B. (1989). *MMPI-2: Minnesota Multiphasic Personality Inventory-2: Manual for administration, scoring, and interpretation.* Minneapolis: University of Minnesota Press.

Butcher, J. N., & Williams, C. L. (2000). *Essentials of MMPI-2 and MMPI-A Interpretation* (2 Ed.). Minneapolis: University of Minnesota Press.

Carson, R. C. (1969). Interpretive Manual to the MMPI. In J. N. Butcher (Ed.), *MMPI: Research Developments and Clinical Applications* (pp. 279-296). New York: McGraw-Hill.

Chisholm, S. M., Crowther, J. H., & Ben-Porath, Y. S. (1997). Selected MMPI-2 scales ability to predict premature termination and outcomes from psychotherapy. *Journal of Personality Assessment, 69*(1), 127-144.

Craig, L. A., Browne, K. D., Beech, A., & Stringer, I. (2006). Differences in personality and risk characteristics in sex, violent, and general offenders. *Criminal Behavior and Mental Health, 16*, 183-194.

Craig, R. J., & Olson, R. E. (2003). Predicting the outcome of methadone maintenance treatment with the negative treatment indicators content scale from the MMPI-2. *Psychological Reports, 93*, 1056-1058.

Curnoe, S., & Langevin, R. (2002). Personality and deviant sexual fantasies: An examination of the MMPIs of sex offenders. *Journal of Clinical Psychology, 58*(7), 803-815.

Curry, S. J., Wagner, E. H., & Grothaus, L. C. (1991). Evaluation of intrinsic and extrinsic motivation interventions with a self-help smoking cessation program. *Journal of Consulting and Clinical Psychology, 59*, 318-324.

Dennison, S. M., Stough, C., & Birgden, A. (2001). The Big 5 dimensional personality approach to understanding sex offenders. *Psychology, Crime & Law, 7*, 243-261.

Derogatis, L. R., & Melisaratos, N. (1983). The Brief Symptom Inventory: An introductory report. *Psychological Medicine, 13*(3), 595-605.

Drapeau, M., Korner, C. A., Brunet, L., Granger, L., Caspar, F., Despland, J.-N., et al. (2003). A psychodynamic look at pedophile sex offenders in treatment. *Archives of Psychiatry and Psychotherapy, 5*(3), 31-42.

Duthie, B. & McIvor, D. L. (1990). A new system for cluster-coding child molester MMPI profile types. *Criminal Justice and Behavior, 17*(2), 199-214.

Eaton County Prosecuting Attorney. (2006). *Michigan Legal Glossary*. Retrieved from http://www.eatoncounty.org/prosecutor/define.htm#csc.

Erickson, W. D., Luxenberg, M. G., Walbeck, N. H., & Seely, R. K. (1987). Frequency of MMPI two-point code types among sex offenders. *Journal of Consulting and Clinical Psychology, 55*(4), 566-570.

Finkelhor, D. (1984). *Child Sexual Abuse: New Theory and Research*. New York: The Free Press.

Firestone, P., Nunes, K. L., Moulden, H., Broom, I., & Bradford, J. M. (2005). Hostility and recidivism in sexual offenders. *Archives of Sexual Behavior, 34*(3), 277-283.

Fisher, D. D., Beech, A., & Browne, K. D. (1999). Comparison of sex offenders to nonoffenders on selected psychological measures. *International Journal of Offender Therapy and Comparative Criminology, 43*(4), 473-491.

Garos, S., Bleckley, M. K., Beggan, J. K., & Frizzell, J. (2004). Intrapsychic conflict and deviant sexual behavior in sex offenders. *Journal of Offender Rehabilitation, 40*(1/2), 23-40.

Geen, R. G. (1998). Aggression and antisocial behavior. In D. Gilbert, S. Fiske & G. Lindzey (Eds.), *The Handbook of Social Psychology* (4 ed., Vol. 2, pp. 317-347). Boston: The McGraw-Hill Company, Inc.

Gingrich, T. N., & Campbell, J. B. (1995). Personality characteristics of sexual offenders. *Sexual Addiction & Compulsivity, 2*(1), 54-61.

Graham, K. R. (1994). The sexual addiction model in treatment of incarcerated offenders: A study on recidivism. *Sexual Addiction & Compulsivity, 1*(3), 278-283.

Greenfeld, L. (1998). *Sex offenses and offenders: An analysis of data on rape and sexual assault*. Retrieved. from http://www.rainn.org/docs/statistics/soo.pdf.

Groth, N. A., Burgess, A. W., & Holmstrom, L. L. (1977). Rape: Power, anger, and sexuality. *American Journal of Psychiatry, 134*(11), 1239-1243.

Gudjonsson, G. H., & Sigurdsson, J. F. (2000). Differences and similarities between violent offenders and sex offenders. *Child Abuse & Neglect, 24*(3), 363-372.

Hair Jr., J. F., & Black, W. C. (2000). Cluster Analysis. In L. G. Grimm & P. R. Yarnold (Eds.), *Reading and Understanding More Multivariate Statistics* (pp. 147-205). Washington, D.C.: American Psychological Association.

Hall, G. C. N., & Hirschman, R. (1991). Toward a theory of sexual aggression: A quadripartite model. *Journal of Consulting and Clinical Psychology, 59*, 662-669.

Hall, G. C. N., & Hirschman, R. (1992). Sexual aggression against children: A conceptual perspective of etiology. *Criminal Justice and Behavior, 19*, 8-23.

Hanson, R. K., & Morton-Bourgon, K. E. (2005). The characteristics of persistent sexual offenders: A meta-analysis of recidivism studies. *Journal of Consulting and Clinical Psychology, 73*(6), 1154-1163.

Haywood, T. W., Grossman, L. S., Kravitz, H. M., & Wasyliw, O. E. (1994). Profiling psychological distortion in alleged child molesters. *Psychological Reports, 75*, 915-927.

Hill, A., Briken, P., Kraus, C., Strohm, K., & Berner, W. (2003). Differential pharmacological treatment of paraphilias and sex offenders. *International Journal of Offender Therapy and Comparative Criminology, 47*(4), 407-421.

Howells, K., Day, A., & Wright, S. (2004). Affect, emotions and sex offending. *Psychology, Crime & Law, 10*(2), 179-195.

Hudson, S. M., Ward, T., & McCormack, J. C. (1999). Offense pathways in sexual offenders. *Journal of Interpersonal Violence, 14*(8), 779-798.

Kalichman, S. C., Dwyer, M., Henderson, M. C., & Hoffman, L. (1992). Psychological and sexual functioning among outpatient sexual offenders against children: A Minnesota Multiphasic Personality Inventory (MMPI) cluster analytic study. *Journal of Psychopathology and Behavioral Assessment, 14*(3), 259-276.

Kalichman, S. C., Shealy, L., & Craig, M. E. (1990). The use of the MMPI in predicting treatment participation among incarcerated adult rapists. *Journal of Psychology & Human Sexuality, 3*(2), 105-119.

Kalichman, S. C., Szymanowski, D., McKee, G., Taylor, J., & Craig, M. E. (1989). Cluster analytically derived MMPI profile subgroups of incarcerated adult rapists. *Journal of Clinical Psychology, 45*(1), 149-155.

Kanfer, F. H. (1975). Self-management models. In F. Kanfer & A. Goldstein (Eds.), *Helping People Change*. New York: Pergamon Press.

Kear-Colwell, J., & Pollock, P. (1997). Motivation or confrontation: Which approach to the child sex offender? *Criminal Justice and Behavior, 24*(1), 20-33.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. *Arch Gen Psychiatry, 62*, 593-768.

Lally, S. J. (2003). What tests are acceptable for use in forensic evaluations? A survey of experts. *Professional Psychology: Research and Practice, 34*(5), 491-498.

Lalumiere, M. L., Chambers, L. J., Quinsey, V. L., & Seto, M. C. (1996). A test of the male deprivation hypothesis of sexual coercion. *Ethnology and Sociobiology, 17*, 299-318.

Langevin, R., Wright, P., & Handy, L. (1990a). Use of the MMPI and its derived scales with sex offenders I. Reliability and validity studies. *Annals of Sex Research, 3*, 245-291.

Langevin, R., Wright, P., & Handy, L. (1990b). Use of the MMPI and its derived scales with sex offenders II. Reliability and criterion validity. *Annals of Sex Research, 3*, 453-486.

Lanyon, R. I. (2001). Psychological assessment procedures in sex offending. *Professional Psychology: Research and Practice, 32*(3), 253-260.

Lee, J. K. P., Pattison, P., Jackson, H. J., & Ward, T. (2001). The general, common, and specific features of psychopathology for different types of paraphilias. *Criminal Justice and Behavior, 28*(2), 227-256.

Levenson, J. S. & Cotter, L. P. (2005). The effects of Megan's Law on sex offender reintegration. *Journal of Contemporary Criminal Justice, 21*(1), 49-66.

Looman, J., Dickie, I., & Abracen, J. (2005). Responsivity issues in the treatment of sexual offenders. *Trauma, Violence, & Abuse, 6*(4), 330-353.

Luke, D. A. (2005). Getting the big picture in community science: Methods that capture context. *American Journal of Community Psychology, 35*(3/4), 185-200.

Marques, J. K., Day, D. M., Nelson, C., & West, M. A. (1994). Effects of cognitive-behavioral treatment on sex offender recidivism: Preliminary results of a longitudinal study. *Criminal Justice and Behavior, 21*(1), 28-54.

Marques, J. K., Nelson, C., Alarcon, J., & Day, D. M. (2000). Preventing relapse in sex offenders: What we learned from the SOTEP's experimental treatment program. In D. R. Laws, S. M. Hudson & T. Ward (Eds.), *Remaking relapse prevention with sex offenders: A sourcebook* (pp. 321-340). California: Sage.

Marshall, W. L., Anderson, D., & Champagne, F. (1997). Self-esteem and its relationship to sexual offending. *Psychology, Crime & Law, 3*, 161-186.

Marshall, W. L., Cripps, E., Anderson, D., & Cortoni, F. A. (1999). Self-esteem and coping strategies in child molesters. *Journal of Interpersonal Violence, 14*(9), 955-962.

Marshall, W. L., & Barbaree, H. E. (1990). An integrated theory of the etiology of sexual offending. In W. L. Marshall, D. R. Laws & H. E. Barbaree (Eds.), *Handbook of Sexual Assault: Issues, Theories, and Treatment of the Offender* (pp. 257-275). New York: Plenum.

McConnaughy, E. A., Prochaska, J. O., & Velicer, W. F. (1983). Stages of change in psychotherapy: Measurement and sample profiles. *Psychotherapy: Theory, Research, and Practice, 20*, 368-375.

McCrady, B. S. (2001). Alcohol use disorders. In D. H. Barlow (Ed.), *Clinical Handbook of Psychological Disorders* (3 ed., pp. 376-433). New York: The Guilford Press.

McMurran, M., Tyler, P., Hogue, T., Cooper, K., Dunseath, W., & McDaid, D. (1998). Measuring motivation to change in offenders. *Psychology, Crime & Law, 4*, 43-50.

Megargee, E. I. (1994). Using the Megargee MMPI-based classification system with the MMPI-2's of male prison inmates. *Psychological Assessment, 6(4)*, 327-334.

Megargee, E. I. (2006). *Using the MMPI-2 in Criminal Justice and Correctional Settings*. Minnesota: University of Minnesota Press.

Megargee, E. I., Mercer, S. J., & Carbonell, J. L. (1999). MMPI-2 with male and female state and federal prison inmates. *Psychological Assessment, 11*(2), 177-185.

Michigan Department of Corrections. (2007). Policy Directive: Supervision of probationers and parolees (Vol. 06.04.130, pp. 1-7).

Michigan Legislature. (1931). The Michigan Penal Code: Act 328 of 1931 (Vol. LXXVI).

Miller, R. D. (2003). Chemical castration of sex offenders: Treatment or punishment? In B. J. Winick & J. Q. L. Fond (Eds.), *Protecting Society from Sexually Dangerous Offenders: Law, Justice, and Therapy* (pp. 249-263). Washington, D.C.: American Psychological Association.

Miller, H. A. & Rollnick, S. (2002). *Motivational Interviewing: Preparing People for Change (2nd Ed.)*. New York, NY: The Guilford Press.

Miller, H. A., & Young, G. R. (1998). Prison segregation: Administrative detention remedy or mental health problem? *Criminal Behavior and Mental Health, 7*(1), 85-94.

Moffitt, T. E., Caspi, A., Harrington, H., & Milne, B. (2002). Males on the life-course persistent and adolescence-limited antisocial pathways: Follow-up at age 26. *Development & Psychopathology, 14*, 179-206.

Murphy, W. D., Coleman, E. M., Haynes, M. R., & Stalgartis, S. (1979). Etiological theories of coercive sexual behavior and their relationship to prevention.

Neidigh, L., & Tomiko, R. (1991). The coping strategies of child sexual abusers. *Journal of Sex Education & Therapy, 17*(2), 103-110.

Nichols, H., & Molinder, I. (1984). *Manual for the Multiphasic Sex Inventory*. Tacoma: Crime and Victim Psychology Specialists.

O'Laughlin, S., & Schill, T. (1994). The relationship between self-monitored aggression and the MMPI-2, F, 4, 9 composite and anger content scale scores. *Psychological Reports, 74*, 733-734.

Prentky, R. A., & Burgess, A. W. (1993). Hypothetical biological substrates of a fantasy-based drive mechanism for repetitive sexual aggression. In A. W. Burgess (Ed.), *Rape and Sexual Assault III* (pp. 235-256). New York: Garland.

Prochaska, J. M., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change: Applications to addictive behaviors. *American Psychologist, 47*(9), 1102-1114.

Prochaska, J. O., & DiClemente, C. C. (1982). Transtheoretical therapy: Toward a more integrative model of change. *Psychotherapy: Theory, Research, and Practice, 19*, 276-288.

Prochaska, J. O., & Prochaska, J. M. (1999). Why don't continents move? Why don't people change? *Journal of Psychotherapy Integration, 9*(1), 83-102.

Project MATCH Research Group. (1997). Matching alcoholism treatments to client heterogeneity: Project MATCH posttreatment drinking outcomes. *Journal of Studies on Alcohol, 58*, 7-29.

Project MATCH Research Group. (1998). Matching alcoholism treatments to client heterogeneity: Project MATCH three-year drinking outcomes. *Alcoholism: Clinical and Experimental Research, 22*, 1300-1311.

Quackenbush, R. E. (2003). The role of theory in the assessment of sex offenders. *Journal of Child Sexual Abuse, 12*(3-4), 77-102.

Quayle, E., Vaughan, M., & Taylor, M. (2006). Sex offenders, internet child abuse images, and emotional avoidance: The importance of values. *Aggression and Violent Behavior, 11*, 1-11.

Rapkin, B. D. & Luke, D. A. (1993). Cluster analysis in community research: Epistemology and practice. *American Journal of Community Psychology, 21*(2), 247-277.

Rokach, A. (2000). Offence type and coping with loneliness. *Psychological Studies, 45*(1&2), 1-8.

Ryan, K. M. (2004). Further evidence for a cognitive component of rape. *Aggression and Violent Behavior, 9*, 579-604.

Sarkar, N. N. & Sarkar, R. (2006). Sexual assault: A crime against women in the perspective of science, society, and law. *International Medical Journal, 13*(1), 31-36.

Schwartz, B. (1997). Theories of sex offenders. In B. Schwartz & H. Cellini (Eds.), *The Sex Offender: New Insights, Treatment Innovations, and Legal Developments* (pp. 2-32). Kingston, NJ: Civic Research Institute.

Schwartz, M. F., & Masters, W. H. (1993). Integration of trauma-based, cognitive behavioral, systemic and addiction approaches for treatment of hypersexual pair-bonding disorder. In P. J. Barnes (Ed.), *Sexual Addiction and Compulsivity* (Vol. 1, pp. 57-76). New York: Brunner Mazel.

Serran, G., Fernandez, Y., Marshall, W. L., & Mann, R. E. (2003). Process issues in treatment: Application of sexual offender programs. *Professional Psychology, Research and Practice, 34*(4), 368-374.

Seto, M. C., & Barbaree, H. E. (1999). Psychopathology, treatment behavior, and sex offender recidivism. *Journal of Interpersonal Violence, 14*, 1235-1248.

Shealy, L., Kalichman, S. C., Henderson, M. C., Szymanowski, D., & McKee, G. (1991). MMPI profile subtypes of incarcerated sex offenders against children. *Violence and Victims, 6*(3), 201-212.

Shine, J., McClosky, H., & Newton, M. (2002). Self-esteem and sex offending. *The Journal of Sexual Aggression, 8*(1), 51-61.

Smallbone, S. W., & Milne, L. (2000). Associations between trait anger and aggression used in the commission of sexual offenses. *International Journal of Offender Therapy and Comparative Criminology, 44*(5), 606-617.

Smith, M. H. (1924). The mental conditions found in certain sex offenders. *Lancet, 206*, 643-646.

Sommers, M. S. (2007). Defining patterns of genital injury from sexual assault. *Trauma, Violence, & Abuse, 8*(3), 270-280.

Sommers, M. S., Schafer, J., Zink, T., Hutson, L., & Hillard, P. (2001). Injury patterns in women resulting from sexual assault. *Trauma, Violence, & Abuse, 2*(3), 240-258.

Sommers, M.S., et al. (2006). The effects of age and ethnicity on physical injury from rape. *Clinical Scholarship for the Care of Women, Childbearing Families, & Newborns, 35*(2), 199-207.

Steinley, D. (2003). Local optima in K-means clustering: What you don't know may hurt you. *Psychological Methods, 8*(3), 294-304.

Stinson, J. D., Becker, J. V., & Tromp, S. (2005). A preliminary study on findings of psychopathy and affective disorders in adult sex offenders. *International Journal of Law and Psychiatry, 28*, 637-649.

Strassberg, D. S. (1997). A cross-national validity study of four MMPI-2 content scales. *Journal of Personality Assessment, 69*(3), 596-606.

Terry, K. J., & Mitchell, E. W. (2001). Motivation and sex offender treatment efficacy: Leading a horse to water and making it drink? *International Journal of Offender Therapy and Comparative Criminology, 45*(6), 663-672.

Tierney, D. W., & McCabe, M. P. (2002). Motivation for behavior change among sex offenders: A review of the literature. *Clinical Psychology Review, 22*, 113-129.

Tierney, D. W., & McCabe, M. P. (2004). The assessment of motivation for behaviour change among sex offenders against children: An investigation of the utility of the Stages of Change Questionnaire. *Journal of Sexual Aggression, 10*(2), 237-249.

Tierney, D. W., & McCabe, M. P. (2005). The utility of the Trans-Theoretical Model of Behavior Change in the treatment of sex offenders. *Sexual Abuse: A Journal of Research and Treatment, 17*(2), 153-170.

Tjaden, P., & Thoennes, N. (1998). *Full report of the prevalence, incidence, and consequences of violence against women: Research report.* Retrieved. from http://www.rainn.org/docs/statistics/fullnvawsurvey.pdf?PHPSESSID=6c89660e6cc455a59b88e8b2b93c26e0.

Valliant, P. M., & Blasutti, B. (1992). Personality differences of sex offenders referred for treatment. *Psychological Reports, 71*, 1067-1074.

Vandiver, D. M., & Walker, J. T. (2002). Female sex offenders: An overview and analysis of 40 cases. *Criminal Justice Review, 27*(2), 284-300.

Velasquez, R. J., Callahan, W. J., & Carrillo, R. (1989). MMPI profiles of Hispanic-American inpatient and outpatient sex offenders. *Psychological Reports, 65*(3), 1055-1058.

Velicer, W. F., Prochaska, J. O., Bellis, J. M., DiClemente, C. C., Rossi, J. S., Fava, J. L., et al. (1993). An expert system intervention for smoking cessation. *Addictive Behaviors, 18*(269-290).

Ward, T., & Beech, A. (2006). An integrated theory of sexual offending. *Aggression and Violent Behavior, 11*, 44-63.

Ward, T., & Gannon, T. A. (2006). Rehabilitation, etiology, and self-regulation: The comprehensive good lives model of treatment for sexual offenders. *Aggression and Violent Behavior, 11*, 77-94.

Ward, T., & Hudson, S. M. (1998). A model of the relapse process in sexual offenders. *Journal of Interpersonal Violence, 13*(6), 700-725.

Ward, T., & Hudson, S. M. (1998). The construction and development of theory in the sexual offending area: A metatheoretical framework. *Sexual Abuse: A Journal of Research and Treatment, 10*(1), 47-63.

Ward, T., & Siegert, R. J. (2002). Toward a comprehensive theory of child sexual abuse: A theory knitting perspective. *Psychology, Crime & Law, 9*, 319-351.