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Identifying Male Sexual Offender Subtypes Using Cluster Analysis and the Static-2002R

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**Abstract**

This study examines whether clinically meaningful subgroups could be identified within a large, undifferentiated group of convicted adult male sex offenders. Of eight cluster analyses, a reliable three-cluster solution emerged based on the subscores of the Static-2002R with 345 sex offenders. To establish the validity of the emergent clusters, the three groups of offenders were compared on four domains: Criminal history, psychosexual development, sexual attitudes and interests, and recidivism. The findings revealed meaningful differences among the group and the implications of subgroup membership is discussed in terms of risk, treatment, and supervision.

### Identifying Male Sexual Offender Subtypes Using Cluster Analysis and the Static-2002R

Sex offenders are a heterogeneous group, diverse in terms of individual demographics, traits, histories, motivations, and risk to re-offend (Bickley & Beech, 2001; Robertiello & Terry, 2007; Hanson & Morton-Bourgon, 2009; Seto & Fernandez, 2011). The evidence suggests that an individual's propensity for sexual violence may involve multiple independent, but potentially interactive underlying risk domains (Barbaree, Langton, & Peacock, 2006; Hudson, Ward, & McCormack, 1999; Malamuth, Heavey, & Linz, 1996; Roberts, Doren, & Thornton, 2002; Stalans, Hacker, & Talbot, 2010; Ward, Hudson, & Keenan, 1998), and that interactive effects between risk domains can have synergistic effects that enhance violence risk beyond the sum of the individual parts (Gretton, McBride, Hare, O'Shaughnessy, & Kumka, 2001; Harris et al., 2003; Hildebrand, de Ruiter, & de Vogel, 2004; Rice & Harris, 1997; Serin, Mailloux, & Malcolm, 2001; Seto, 2005). These individual differences in criminogenic needs and risk for re-offence create challenges for those responsible for their rehabilitation and management.

It is generally accepted in the field of offender rehabilitation that treatment programs that adhere to the principles for effective rehabilitation are more effective for reducing criminal recidivism than are programs that fail to adhere to those principles (Andrews & Bonta, 2010; Bonta & Andrews, 2007). These principles, known collectively as the Risk-Need-Responsivity (R-N-R) model for offender assessment and rehabilitation, hold that the intensity of treatment interventions should correspond to the level of risk posed by the individual offender, such that high risk offenders receive high intensity services. The R-N-R model further maintains that treatment is more effective when it targets relevant criminogenic needs and where interventions are provided in a manner that corresponds to the offender's abilities. Recently, Hanson,

Bourgon, Helmus, and Hodgson (2009) demonstrated that the principles of the R-N-R model generalize to treatment outcomes for sex offenders. Given the empirical support that exists for the model, and in light of the financial and human resource limitations universally faced by agencies and institutions responsible for supervising and treating sexually abusive men, the R-N-R model represents an important, empirically-supported process to inform the allocation of those limited resources. However, application of the R-N-R model relies on the ability of clinicians and organizations to validly discriminate between individual sex offenders who pose varying degrees of risk and who are distinguished from one another on the basis of differing criminogenic needs.

Marshall (1997) recommended that researchers should aim to reduce the heterogeneity of the larger, undifferentiated sex offender population to manageable proportions. To that end, well-constructed offender typologies can be helpful for understanding the offending patterns of sex offenders, and as such, typologies are an important tool for theory building and for identifying and introducing interventions that prevent future offending (Knight & Prentky, 1990; Sandler & Freeman, 2007). Over the years various classification schemes have been developed in efforts to more fully understand the nature and etiology of sex offenders. The simplest and most common sex offender typology is based simply on the age of the offender's victim or victims, thereby distinguishing between child molesters and rapists (Looman, Gauthier, & Boer, 2001). Early classification schemes by Cohen, Seghorn, and Calmas (1969, as cited in Ward, Polaschek, & Beech, 2006) and Groth (Groth, Burgess, & Holmstrom, 1977; Groth, Hobson, Gary, 1982) also distinguished between child molesters and rapists. These systems were based primarily on clinical observations, informed by psychodynamic theory, and categorized offenders based largely on the presumed motivation behind their sexually violent behavior.

Although these schemes hold some intuitive appeal for clinicians, the resulting subtypes lacked external validation and evidence of acceptable inter-rater reliability.

Subsequent typologists adopted approaches to classification that utilized psychometric data and multivariate statistics to generate statistically-derived typologies. Beech (1998) used cluster analytic procedures to analyze psychometric test data from 140 child molesters and found two distinct clusters distinguished by the severity and pervasiveness of difficulties in a range of offense-related and socioaffective areas of functioning. Beech (1998) labelled these two clusters of offenders as high deviance and low deviance in accordance with relative scores on various psychometric measures. Mandeville-Norden and Beech (2009) expanded upon Beech's 1998 two cluster typology through further cluster analysis of data from 437 child molesters. They identified three clusters of offenders; two of which resembled the high and low deviancy subgroups previously identified by Beech (1998), and a third subgroup distinguished by unique treatment needs associated with poor coping and social functioning. Taken together these studies indicate that among child molesters there are multiple subgroups that are distinct from one another in terms of their criminogenic characteristics, treatment needs, and risk to reoffend.

The most extensively studied sex offender typologies originate from Knight and colleagues at the Massachusetts Treatment Centre, where researchers have developed and refined typological independent systems; one for classifying child molesters and another for rapists (Knight & Prentky, 1990). The MTC classification systems have undergone multiple revisions and have evolved to comprise a multi-axial system that classifies individual offenders on the basis of factors such as primary motivation and offender characteristics (Knight, 1989; Knight & Prentky, 1990). Examinations of the MTC taxonomies have demonstrated that they are replicable (Barbaree, Seto, Serin, Amos, & Preston, 1994; Looman, et al., 2001), have specific

links to developmental antecedents (Rosenberg, Knight, Prentky, & Lee, 1988), and that different subtypes show differential propensity for criminal offending (Knight, Prentky, & Cerce, 1994).

Although the MTC classification systems have good explanatory depth and external consistency with existing etiological theories of sex offending (Ward et al, 2006), they are not without limitations, particular with regard to the clinical utility of the classification schemes. The MTC:CM3, for example, did not include incest offenders in the development sample and is therefore only applicable to extrafamilial child molesters (Knight & Prentky, 1990). Furthermore, the MTC:CM3 is theoretically capable of generating up to 24 different subtypes of extrafamilial child molester, although nearly half of those subtypes were poorly represented (i.e., 3 or fewer cases) in the overall MTC development sample (Ward et al, 2006). Furthermore, the creation of separate classification systems for child molesters and rapists presumes a significant degree of homogeneity among offenders based on victim selection, and disregards contemporary research that indicates that a significant proportion of the sex offenders engage in “cross-over offending” against victims of different ages (Heil, Ahlmeyer, & Simons, 2003). Finally, the information used for classifying offenders within the MTC schemes may not be available to evaluators in all settings, and the process by which classification is performed is rather involved and time consuming (Bickley & Beech, 2001). Together, these limitations may deter the average clinician from utilizing the MTC classification systems to inform their daily clinical practice.

The purpose of the current study is the identification of clinically meaningful subgroups within a large, undifferentiated group of convicted adult male sex offenders, and consideration of the implications of subgroup membership for risk, treatment, and supervision. In order for our results to be of direct relevance and utility to clinicians we opted to classify offenders on the

basis of similarities and differences on the Static 2002R; a brief, validated actuarial risk appraisal tool that is widely available to clinicians and can be completed on the basis of information that is typically available to clinicians. We hypothesized that our analyses would yield relatively homogeneous subgroups of offenders who differ from members of other subgroups in terms of their criminogenic needs, criminal and developmental histories, actuarially estimated risk for re-offence, and observed recidivism rates. In light of the empirical data and theoretical models of offending that highlight the importance of general criminality and sexual deviance as domains of risk for sexual violence (Hanson & Bussiere, 1998; Hanson & Morton-Bourgon, 2007) and theoretical models (Doren, 2004; Lalumière, Harris, Quinsey, & Rice, 2005; Seto, 2008), we hypothesized the existence of at least two subgroups within the total sex offender sample: One characterized by higher levels of sexual deviancy and low criminality, and the second characterized by higher levels of general criminality in the absence of sexual deviancy. The literature further suggests the existence of a smaller, third group of offenders who are characterized by elevated levels of both general criminality and sexual deviancy. Correspondingly, this select group of criminally-inclined sexually deviants will likely exhibit higher degrees of persistence in their sexual offending, as well as higher rates of all forms of recidivism.

## **Method**

### **Sample**

Data for 345 sexual offenders were collected from clinical files at a forensic psychiatric outpatient clinic and an inpatient sexual offender treatment program. The clinic offers court-ordered assessment and treatment services that address offending behaviors and mental health. Similarly, the inpatient program offered intensive sex offence-specific treatment. The offenders

in our sample were convicted of sexual offending with the average age of the sample being 36.8 years ( $SD = 13.32$ ). In terms of their index offence, most offenders had victims in the pre-pubescent age range (37.4%,  $n = 129$ ) while 26.1% ( $n = 90$ ) had post-pubescent victims and 26.1% ( $n = 90$ ) had adult victims. A small percentage had multi-aged victims in their index offence cluster (i.e., 1.7%,  $n = 6$ , had both pre- and post-pubescent victims; 1.2%,  $n = 4$ , had pre-pubescent and adult victims; 0.9%,  $n = 3$ , had post-pubescent and adult victims). Another group (6.9%;  $n = 24$ ) had child pornography possession, production, or distribution offences as their index offence (note that only child pornography offenders with prior contact offences were included in the sample, given that the Static-2002R should only be used with those who have contact offences). Victim age was unspecified in the files of three offenders. Additional demographic details about the sample are included in Table 1.

### Measures

The items on the following measures were scored retrospectively by trained research assistants based on clinical file information.

*Static-2002R*. The Static-2002R (Helmus, Thornton, Hanson, & Babchishin, 2012) was developed to assess risk for sexual recidivism among adult males known to have committed at least one sexual offence. It is a revised version of the Static-2002 (Phenix, Doren, Helmus, Hanson, & Thornton, 2008). It contains 14 items in five content areas: a single age at release item, persistence of sexual offending items (3 items), deviant sexual interests items (3 items), relationship to victims items (2 items), and general criminality items (5 items). Total scores range from 0 to 14, placing individuals into one of five risk categories. Intraclass correlation has been shown to be very good, intraclass correlations ( $ICCs$ ) = .98 (Helmus & Hanson, 2007). Predictive validity of the original version, the Static-2002, for nonviolent, any, serious, and

sexual recidivism were at the moderate level ( $r = .65, .69, .70, \text{ and } .70$ , respectively). The Static-2002 was revised by the developers (Helmus et al., 2012) to include weighted scores reflecting higher risk for younger offenders for the age at release item. The remaining items on the renamed Static-2002R are identical to the Static-2002, but the possible scores now range from -2 to 13 (Helmus et al., 2012).

*Screening Scale for Pedophilic Interests (SSPI)*. The SSPI (Seto & Lalumière, 2001) was developed to provide a measure of pedophilic sexual interests for clinical screening and research purposes, when phallometric testing was not available (see Exhibit 8.2 of Quinsey et al., 2006; Seto, Harris, Rice, & Barbaree, 2004). This brief screening tool is based on victim characteristics that includes 4 items (i.e., presence of male victim, more than one victim, victim is under the age of 12, unrelated victim), and total scores on the SSPI could range from 0 to 5. Among adult male offenders with child victims, the SSPI was found to be significantly and positively associated with phallometrically measured sexual arousal to children (Seto et al., 2004; Seto & Lalumière, 2001; Seto, Murphy, Page, & Ennis, 2003), and was moderately predictive of violent recidivism ( $AUCs = 0.62-0.67$ ) and sexual recidivism ( $AUCs = 0.62-0.69$ ) (Seto et al., 2004).

*Childhood and Adolescent Taxon Scale (CATS)*. The CATS (Harris, Rice, & Quinsey, 1994) is an 8-item measure scored from file information, which has been used as an alternative index of psychopathy. The CATS was developed as a proxy measure of antisocial disposition for inclusion in the Violence Risk Appraisal Guide (VRAG) and Sex Offender Risk Appraisal Guide (SORAG) in cases where a score on the Psychopathy Checklist-Revised (PCL-R) is unavailable (Quinsey et al., 2006). The items (i.e., elementary school maladjustment, teenage alcohol problem, childhood aggression, childhood behavioral problems before age 15,

suspension or expulsion, arrested under 16, parental alcoholism, lived with both biological parents until 16) reflect aspects of childhood maladjustment that are associated with life course persistent criminality, and are scored dichotomously and summed for a total score ranging from 0 to 8. Predictive accuracy studies have shown almost identical results using the CATS as a replacement for the PCL-R ( $ROC = .75$ ; Bartosh, Garby, Lewis, & Gray, 2003). The CATS has also demonstrated discriminant validity in a study with 106 male offenders, discriminating violent recidivists from other recidivists (common language effect size, CLES, of 0.61), good interrater reliability with a kappa coefficient of 0.924, and good construct validity when paired with PCL-R scores ( $r = 0.89$ ; Glover, Nicholson, Hemmati, Bernfeld, & Quinsey, 2002).

*Cormier–Lang Criminal History Score (CLS)*. The CLS is used to quantify an offender's history of criminal offences, a current or index offence, or a particular subgroup of offences and can be used when official police information is available (Quinsey et al., 2006). Different point values are assigned to different types of offences (e.g., robbery = 7 points), and the score is tallied based on an offender's prior charges and convictions. Three types of CLS were calculated for the present study; these include a nonviolent CLS scale (used in both the SORAG and VRAG), a violent CLS scale (used only in the SORAG), and a sexual violence scale that was specifically created for this study (this latter scale was a modified version of the violent CLS scale that only includes sexual offences).

Rossegger et al. (2006) reported that the interrater reliability of the overall VRAG is strong ( $ICC = .95$ ), and Douglas, Yeomans, and Boer (2005) reported mean item-level reliability of ICCs ranged from .49 to 1.00, with a mean of .79. Quinsey et al. (2006) reported that the predictive validity of the nonviolent CLS scale is within an acceptable range ( $AUCs = .70-.74$ ). A multisite examination of the validity of the CLS scores indicated strong interrater reliability

when 10 cases were coded for both the nonviolent ( $r = .98$ ) and violent ( $r = 1.00$ ) scales (Harris et al., 2003).

*Multiphasic Sex Inventory-2<sup>nd</sup> edition (MSI-2).* The MSI-II (Nichols & Molinder, 2000) is a theory-based self-report questionnaire used with sexual offenders and designed to assess a wide range of psychosexual characteristics. The MSI-2 is an expanded version of the original MSI (Nichols & Molinder, 1984) and includes 560 true or false items that make up 40 scales and indices, including sexual dysfunction, psychosexual scales, accountability scales, behavioral scales, and several social desirability scales. Internal consistency estimates (majority of scales had Cronbach's alphas of 0.73 to 0.90) and temporal reliability ( $r_s < 0.76$ ) of the MSI-2 are good (Nichols & Molinder, 2000). Cross validation studies with 12 independent samples of child molesters from across the U.S. showed no significant differences among the samples on 36 scales of the MSI-2. Among eight matched samples with different deviant sexual interests, significant mean differences were found between samples on the MSI-2 scales except for the Masochism scale (Nichols & Molinder, 2000).

*Offender characteristics.* Demographic variables that characterize each offender's history were also coded from files. They include (a) age at the time of his first conviction (continuous); (b) four childhood abuse variables (i.e., physical, sexual, neglect, caregiver inconsistency; dichotomously scored as absent versus present); and (c) three sexual history variables (i.e., age at masturbation onset, age at first consensual sexual intercourse, number of sexual partners; continuous).

*Recidivism.* In order to assess recidivism accurately, offenders were included in the analysis only if the follow-up period was longer than 2 years to allow for a minimal amount of time post-release. Data from criminal records received from the Canadian Police Information

Centre (CPIC) and the provincial Correctional Management Information System (CoMIS) were analysed to determine whether there was a new charge and/or conviction, and whether the re-offence was violent (e.g., assault, kidnapping, unlawful confinement, weapons offences, murder) and whether the re-offence was sexual (e.g., aggravated sexual assault, sexual assault, sexual interference, indecent act, sexual exploitation, child pornography).

### **Procedures**

Clinical files were searched at an outpatient forensic clinic and an inpatient treatment program to identify patients with a sexual offence on their records; hence, research participants were not solicited for this study. The case files that were reviewed contained assessment reports, criminal records, case notes, offender reports, demographic information, and some description of victim information. The present study is part of a larger database in which 406 variables were coded from the case files on each offender. To ensure we maintained strong interrater reliability, research assistants received a full day of training on the variables, a small subset of case files were coded independently by two raters, and interrater reliability (reported elsewhere, Jung, Ennis, Stein, Choy, & Hook, 2013) was established for some of the risk measures and items and the offender characteristics variables (whereas some risk measures and items and psychometric scales were recorded directly from the case files and interrater reliability was not considered a concern). Specific to the Static-2002R, two research assistants also independently rated 29 clinical files of sexual offenders to examine interrater reliability, and *ICCs* were calculated for each item. *ICCs* ranged from moderate to strong, 0.52 to 1.00, with two items falling below 0.70 (item 4, rate of sex offending; item 13, years free prior to index sex offence). Complete percentage agreement (i.e. same rating given by each rater) ranged from 77 to 100%.

### **Statistical Analyses**

To test our hypothesis that the larger, undifferentiated group of sex offenders comprised three distinct clusters, we applied a variety of distance measures, strategies, and methods (see Table 1) to obtain eight different 3-cluster solutions based on the five subscores of the Static-2002R: (a) age at release, (b) persistence of sexual offending, (c) deviant sexual interests, (d) relationship to victims, and (e) general criminality. In the subsequent section, we first demonstrate the consistency and reliability of the obtained cluster solutions, and then establish the validity of the emergent clusters, by examining whether they demonstrate the characteristics proposed for the distinct groups.

In order to assess the reliability (consistency), we report the pairwise agreements between the eight cluster solutions and Fleiss's kappa, a measure of inter-rater consistency of more than two raters. Warrens (2008) showed that Cohen's kappa, a measure of inter-rater consistency for two raters, is equivalent to the widely used Hubert-Arabie Rand Index, a measure of cluster consistency for two clustering methods. Therefore using a generalized measure of inter-rater consistency for more than two raters helps in our setting to assess the reliability of the eight calculated cluster solutions.

For applying the inter-rater measure to assess the consistency of the different clustering methods, for each cluster solution the permutation of clusters that maximizes the total diagonal count in the contingency table with cluster solution 1 is used. This approach is equivalent to Reilly, Wang, and Rutherford's study (2005) for comparing two clustering methods. To study the nature of the emergent clusters, we conducted ANOVA for the Static-2002R total and its subscales followed by multiple comparisons using Bonferroni correction. The same statistical analyses were used for validating the clusters using other variables with numerical responses, but we applied chi-squared tests in cases of categorical variables.

## Results

The pairwise agreements for the eight clustering methods fall between 59.7% and 100% (see Table 2). The clusters found based on the average method (solutions 3 and 6) are very similar (agreement is 96.2), but are slightly different than the other six solutions (agreements mostly between 60 and 70%). The agreements for the remaining solutions fall between 79.4% and 100% and indicate very high agreement.

Fleiss' kappa for all eight solutions is 0.622 ( $z = 82.9, p < .001$ ) and for the six solutions not including the average method it is 0.785 ( $z = 75.7, p < .001$ ). Both are significantly different from 0 and indicate substantial agreement between the eight and six clustering solution, respectively.

### Cluster Analysis

The cluster variate is the set of variables representing the characteristics used to assign subjects to clusters. For our purposes, the cluster variate was comprised of the five Static-2002R sub-scores: Age at release; Persistence of sexual offending; Deviant sexual interests; Relationship to victim; and General criminality. Cluster analyses identified a three-cluster solution. We used the first solution to validate the three clusters. Demographic information on each cluster is listed in Table 1. All three clusters significantly differed from one another based on their total Static-2002R scores,  $F(2,335) = 48.6, p < .001$ , and each cluster was labeled based on the mean Static-2002R score of its members, and their associated risk categories. The first cluster ( $n = 147$ ) had a mean Static-2002R score of 2.25 and was correspondingly labeled Low Risk. The second cluster ( $n = 143$ ) had a mean Static-2002R score of 3.81 and was correspondingly labeled Low-Moderate (Low-Mod) Risk. The third and final cluster ( $n = 55$ ) had a mean Static-2002R score of 5.77 and was correspondingly labeled Moderate-High (Mod-

High) Risk. Table 3 lists means, standard deviations, and inferential statistics, and Figure 1 shows the distribution of scores on the Static-2002R for the entire sample.

The three clusters were compared on the basis of the Static-2002R sub-scores that served as the basis for the cluster analysis. The Mod-High cluster clearly distinguished itself as the highest risk for sexual recidivism of the three groups by having the highest scores across all but one of the Static-2002R risk domains. Compared to the Low Risk and Low-Mod Risk clusters, the Mod-High Risk cluster had the highest mean scores on the scales reflecting Persistence ( $t(342) = 11.9, p < .001$  and  $t(342) = 13.0, p < .001$ , respectively), Deviant Sexual Interests ( $t(340) = 5.3, p < .001$  and  $t(340) = 5.6, p < .001$ , respectively), Relationship to Victim (i.e., extrafamilial and stranger victims) (compared to Low Risk group only,  $t(339) = 3.2, p < .01$ ), and General Criminality ( $t(342) = 4.6, p < .001$  and  $t(342) = 5.0, p < .001$ , respectively) domains.

Unlike the Mod-High Risk cluster, which was clearly distinguishable from the remaining two clusters, differences between the Low and Low-Mod Risk clusters were less dramatic and mostly non-significant. The Low and Low-Mod Risk clusters had similar mean scores on all four subscales. A striking and significant age difference existed among all three clusters, with the Low risk group ( $M = 48.7; SD = 12.28$ ) being considerably older than the Low-Moderate ( $M = 32.4; SD = 10.64$ ), and Moderate-High Risk ( $M = 38.9; SD = 14.39$ ) groups,  $F(2,341) = 68.5, p < .001$ . All pairwise comparisons were significant with the Bonferroni correction.

### **Cluster Validation**

The distinctiveness of the three clusters was examined by investigating between groups differences on a range of variables over four domains of comparison: (1) Criminal history, (2) psychosexual development, (3) sexual attitudes and interests, and (4) recidivism.

***Criminal History.*** The three clusters were compared on the basis of their criminal

histories (see Table 4 for means and standard deviations by cluster for each validation variable). Both Mod-High and Low-Mod Risk groups were significantly younger, on average, when they incurred their first criminal convictions than the Low Risk group,  $t(268) = 3.7, p < .01$ , and  $t(268) = 4.9, p < .001$ , respectively. Compared to the Low Risk and Low-Mod Risk groups, the Mod-High Risk cluster had significantly higher mean Cormier Lang score for sexual ( $t(321) = 2.8, p < .05$  and  $t(321) = 4.0, p < .001$ , respectively), violent ( $t(323) = 2.6, p < .05$  and  $t(323) = 3.3, p < .01$ , respectively), and all types of offences ( $t(321) = 3.4, p < .01$ , and  $t(321) = 3.4, p < .01$ , respectively). The Low and Low-Mod Risk groups did not differ from one another on any of the Cormier Lang criminal history indices. This, despite the fact that the Low Risk cluster was comprised of offenders who were, on average, 10 years older than the average offender in the Low-Mod Risk group. Clusters were also compared on the basis of whether or not members had previously violated the restrictions of a conditional release. Forty-three percent (43%) of offenders in the Mod-High Risk cluster had previously failed on conditional release, relative to rates of only 17% and 19% among the Low and Low-Mod Risk clusters,  $\chi^2(2) = 16.0, p < .001$ .

***Psychosocial Development.*** The three clusters were compared on variables reflecting early developmental experiences, early problems with psychosocial functioning, and sexual development. Table 5 lists the means and standard deviations by cluster and inferential statistics for each validation variable.

The three clusters were compared in relation to experiences of childhood victimization. Members of the Mod-High Risk cluster were more likely than the Low or Low-Mod Risk clusters to have been sexually abused as children, and were nearly three times more likely to have experienced parental neglect than the Low Risk cluster. Rates of child physical abuse were observably higher among the Mod-High Risk cluster but this difference did not reach statistical

significance. The three groups were not significantly different in terms of experiencing caregiver inconsistency in childhood and adolescence (i.e., did not live with both biological parents until the age of 16), with greater than 50% of each cluster's membership having experienced a disruption in caregiver consistency.

The Childhood and Adolescent Taxon Scale (CATS) reflects indicators of early life maladjustment that are associated with life course persistent antisociality. Although a trend was observed where the greater the risk, the higher the CATS score, only the mean CATS score of the Mod-High Risk cluster was significantly higher than in the Low Risk cluster,  $t(152) = 3.5, p < .01$ . The Mod-High Risk cluster exhibited the highest scores on individual CATS items reflecting adolescent alcohol problems, and childhood aggression, and both the Mod-High and Low-Mod Risk clusters were more likely than the Low Risk cluster to have been suspended or expelled from school, and to have associated with delinquent peers during adolescence. Significant differences existed among the clusters regarding early childhood maladjustment, onset of criminal involvement before the age of 16, and evidence of peer rejection, with the highest rates belonging to the Mod-High Risk group, followed by the Low-Mod Risk cluster, and the lowest rates belonging to the Low Risk cluster. On the Antisocial Behavior Scale of the MSI-2, a similar trend emerged with the Mod-High Risk group receiving a significantly higher score than the Low Risk group,  $t(72) = 3.4, p < .01$ .

The three clusters were compared on the basis of whether there was a history of clinically significant problems related to attention, concentration, and/or hyperactivity in childhood. Subjects were identified as positive for ADD/ADHD-related problems if there had ever been a formal diagnosis of ADD or ADHD, or if the offender self-reported associated problems during childhood. Due to the nature in which this variable was coded it is likely an underestimate of the

number of subjects who suffered from undiagnosed or otherwise unreported problems with attention and concentration as children. Nonetheless, between groups comparisons revealed that offenders in the Low-Mod and Mod-High Risk clusters were approximately three times more likely than Low Risk offenders to have suffered from ADHD-related problems in childhood,  $\chi^2(2) = 8.9, p < .05$ .

The three clusters were compared on variables related to the onset and frequency of sexual behavior. There were no between groups differences for age at first masturbation, age at first consensual intercourse, or the number of sexual partners over their lifetimes. This finding is notable given the large age differences between the Low Risk cluster and the other two groups.

***Sexual Attitudes and Interests.*** Using the SSPI and the scales on the MSI-2, differences among the three clusters were examined (see Table 6 for the means, standard deviations, and inferential statistics for each cluster validation variable). First, the clusters were compared using the SSPI, which is a brief actuarial scale associated with pedophilic arousal. The Mod-High Risk cluster once again had the highest score on the SSPI, indicating greater pedophilic interest than the Low-Mod Risk cluster,  $t(311) = 4.4, p < .001$ . The SSPI score of the Low Risk cluster fell between the Mod-High and Low-Mod Risk groups, but only significantly differed from the Mod-High Risk group,  $t(311) = 3.9, p < .001$ .

MSI-2 data was available for only 75 subjects in the total sample. Twelve (16%) of those subjects were members of the Mod-High risk cluster, and 31 (41%) and 32 (43%) subjects with MSI-2 data were in the Low-Mod and Low Risk clusters, respectively. The MSI-2 includes scales that compare the offender's test responses with those of large normative samples of child molesters and rapists. The three clusters were similar in terms of their resemblance to a comparison sample of child molesters; however, differences emerged in the cluster's similarity

to the average rapist. Mod-High Risk offenders most closely resembled the rapist comparison sample, and significantly differed from the Low Risk offenders,  $t(69) = 3.1, p < .01$ , who resembled the rapist comparison group the least. Mod-High Risk cluster reported the highest levels of sexual obsessions, and significantly differed from the Low Risk group,  $t(72) = 3.6, p < .01$ . Mod-High Risk offenders described themselves as more emotionally needy than other two groups, and were significantly higher on this subscale of the MSI-2 than Low-Mod Risk offenders,  $t(72) = 2.5, p < .05$ . Perhaps notably, there were no differences between the three groups in terms of self-reported pornography use.

The MSI-2 includes items and scales that reflect cognitive variables, such as how the offender thinks about his offences, treatment, and the future. All three clusters reported levels of denial or justification for their sexual misconduct that were not significantly different. Compared to the Low Risk and Low-Mod Risk groups, the Mod-High Risk group admitted having engaged in more planning (scheming) for their offences ( $t(72) = 4.9, p < .001$ , and  $t(72) = 4.7, p < .001$ , respectively), reported higher levels of mean scores on the “superoptimism” scale (i.e., unjustified expectations that everything will be fine;  $t(72) = 3.5, p < .01$ , and  $t(72) = 2.5, p < .05$ , respectively), and received higher scores on the Treatment Attitudes Index ( $t(69) = 3.5, p < .01$ , and  $t(69) = 3.3, p < .01$ , respectively) than both the other clusters. Although this latter index is intended to represent an offender’s motivation to engage in treatment, review of the items that comprise the scale reveals a range of items reflecting emotions and cognitions, rather than attitudes as the scale name suggests. Thoughts and feelings addressed by this scale include guilt, shame, victim sympathy, and the sense of being out of control. Consequently, the Treatment Attitudes Index may be better understood as a measure of egodystonia; that is, the degree to which the individual is uncomfortable with his offense-related thoughts and feelings.

No differences were evident between the Low Risk and Low-Mod Risk clusters on any of these variables.

**Recidivism.** The three clusters were compared on the basis of observed recidivism rates for general, violent, and sexual recidivism (see Table 7 for the means and standard deviations by cluster and inferential statistics for each validation variable). Consistent with each group's mean Static-2002R scores, the Mod-High Risk group demonstrated the highest rates of general (34%) violent (20%), and sexual (16%) recidivism. However, only general recidivism demonstrated statistically significant differences among the three groups,  $\chi^2(2) = 6.1, p < .05$ . Notably, observed sexual recidivism rates in this sample are quite similar to the 5-year sexual recidivism rates observed among the Static-2002R "Routine" sample.

### Discussion

Consistent with our hypotheses, our cluster analysis identified three distinct, naturally occurring subgroups of offenders within the larger, undifferentiated sample (see Figure 1). Those three clusters were distinguished from one another by virtue of differing actuarial risk scores, with the smallest cluster emerging as distinctly high risk relative to the other two clusters. The Mod-High Risk cluster had the highest average total score on the Static-2002R and the highest scores on all but one of the associated Static-2002R risk domains, including the key domains of Sexual Deviancy, General Criminality, and Persistence. The Mod-High Risk cluster was characterized by a wide range of problems associated with poor social adjustment and externalizing behavior during childhood and adolescence, greater sexual deviancy and emotional neediness in adulthood, and more planning in the performance of their sexually abusive acts. Correspondingly, the Mod-High Risk cluster exhibited the highest observed recidivism rates for all types of recidivism. From the R-N-R perspective, the Mod High Risk cluster clearly requires

the most intensive treatment programming and the most intensive management efforts in the community.

The differences between the Low and Low-Mod Risk clusters were less obvious. Indeed, with regard to the Static 99R, the only difference between these two clusters was in terms of offender age, with members of the Low-Mod Risk cluster being an average more than 20 years younger than the offenders in the Low Risk cluster. In fact, the difference between mean scores for the age at release item (1.35) almost entirely account for the difference between the two clusters' mean Static 2002R total scores (1.56). This observation suggests the possibility that the offenders in the Low Risk cluster may, for all intents and purposes, be similar to those in the Low Mod Risk cluster, except for the fact that they were brought to justice and subsequently assessed at a later point in their chronological development. The absence of differences in observed recidivism rates between these two clusters lends support to this possibility; however, significant differences on indicators of early life maladjustment suggest that meaningful distinctions do exist between these two subgroups. Specifically, offenders in the Low-Mod Risk cluster had significantly earlier onset of criminal behavior than the Low Risk cluster, as well as higher prevalence of developmental factors that can reasonably be interpreted to reflect early evidence of poor behavioral self-regulation and associated social problems (i.e., ADHD, early maladjustment, school suspensions/expulsions, peer rejection and peer delinquency). Taken together these findings suggest that that the developmental histories of those in the Low-Mod and Mod-High Risk clusters resemble the histories of the Life Course Persistent offenders described in Moffitt's developmental theory of crime (1993; Moffitt & Caspi, 2001). Moffitt posited that Life Course Persistent criminal offenders begin to engage in antisocial behavior in early childhood as the result of neuropsychological deficits that impair the individual's capacity

for behavioral self-management. The resulting acting-out behavior leads to peer rejection in childhood and affiliation with other socially rejected, criminally inclined kids. Relatively higher rates of ADD/ADHD in childhood for Mod High and Low Mod Risk offenders, in conjunction with greater prevalence of early childhood maladjustment, social rejection, affiliation with delinquent peers, and early onset of criminal behaviour all conform to Moffitt's formulation and suggest that the criminal tendencies of offenders in the Low Risk cluster are less engrained than those of offenders in the higher risk subgroups.

It is also notable that although the Low and Low-Mod Risk clusters did not differ regarding the extent and severity of their criminal histories, the large age difference between these two groups may serve to obscure differences in the frequency and severity of offending. On average, Low Risk offenders were approximately 22 years older than Low-Mod Risk offenders and did not incur their first criminal conviction until an average age of 34—nine years later than the Low-Mod Risk cluster. Together, this suggests that Low-Mod Risk offenders in this sample earned similar Cormier Lang index scores as the Low Risk cluster, but they did so with an average of 13 fewer years of opportunity in their criminal careers. This consideration further highlights the salience of general criminal tendencies, likely attributable to poor capacity for behavioral self-control, as the primary factor distinguishing the two relatively higher risk clusters from the Low Risk cluster in this sample.

The results of these analyses have implications for treatment and supervision of convicted sex offenders, and those implications are best understood through the lens of the Risk-Need-Responsivity model. First, there were clear differences in the level of risk posed by offenders as a function of which cluster they belonged to, and those differences were consistent regardless of what type of criminal recidivism was considered. Importantly, observed recidivism rates

coincided with between-group differences in actuarially derived risk estimates using the Static-2002R, demonstrating that convicted sex offenders can validly be triaged (i.e., decision according to degree of urgency) and prioritized for more intensive services in accordance with actuarially-derived estimates of risk for re-offence. Furthermore, it is notable that rates for all forms of recidivism—sexual, violent, and general—coincided with Static-2002R rankings, and that rates of non-sexual recidivism were not trivial, which taken together highlights the importance of targeting non-sexual criminogenic needs for convicted sex offenders on an as-needed basis.

In accordance with the Risk principle, the Mod-High Risk cluster, characterized by high levels of both general criminality and sexual deviancy, high actuarial risk scores, and high rates of recidivism warrant the most intensive treatment and supervision. The offenders in this cluster presented with a range of criminogenic needs including those associated with both sexual deviancy (e.g., pedophilic interest, sexual preoccupation) and general criminality (e.g., impulsivity). Correspondingly, rehabilitative efforts for these offenders should be broad, targeting multiple criminogenic needs including the need for improved behavioral and sexual self-regulation. Given the range and relative depth of this group's treatment needs, and considering the chronicity of their sex offending, treatment needs to be provided in larger, more frequent doses, over a lengthier period of treatment, graduated release, and community supervision.

Also worthy of note, the Mod-High Risk cluster demonstrated elevated scores on MSI-2 scales that reflected scheming, superoptimism, and treatment attitudes. Relatively high degrees of planning associated with past offences lends itself to traditional treatment interventions that seek to identify and disrupt the offence cycle, because the process of offending for these

offenders is, at least in some cases, explicit and deliberate. Although the Mod-High Risk cluster was more motivated for treatment than the other clusters, they were simultaneously and unrealistically optimistic that treatment would be successful. Our results further indicated that although Mod-High Risk offenders were no more or less likely to justify or deny their sexually abusive behavior, they did generate higher scores on the MSI-2 Cognitive Distortion and Immaturity (CDI) scale. The CDI scale reflects the offender's tendency to adopt a victim stance in relation to their past sex offences, and high scores suggest difficulty accepting responsibility for one's abusive behavior. Interestingly, a study of the previous version of the Multiphasic Sex Inventory (MSI) found that offenders with higher scores on the MSI Cognitive Distortion Immaturity scale, such as the Mod-High Risk offenders in our sample, demonstrated poorer progress towards treatment goals, were rated as having worse attitudes in treatment, and were clinically judged by treatment providers as most likely to reoffend (Simkins, Ward, & Rinck, 1989). Notably, Simkins et al. also found the CDI scale to be correlated with other MSI scales reflecting sexual obsessions, offences against child victims, sexual fantasy, and paraphilic interests.

Regarding the Low and Low-Mod Risk clusters, relatively lower actuarial risk scores and lower observed recidivism rates indicate that offenders in these groups are appropriate for lower levels of service than the Mod-High Risk offenders. Low re-offence rates and the presence of relatively good behavioral controls suggest that offenders in the Low Risk cluster are appropriate for low intensity treatment and supervision in the community. Low-Mod Risk offenders would not likely require interventions targeting sexual deviancy specifically, but would be appropriate for low to moderate intensity community-based treatment with emphasis on enhancing behavioral self-regulation and planning to avoid situations that might lead to criminal

impulsivity.

The findings from this study contribute to our understanding of how risk assessment and treatment considerations interact, but it is not without limitations. Although our original sample size was appropriate and adequate for cluster analysis, one of the three clusters was much smaller than the other two groupings, and missing data resulted in considerably reduced subsample sizes for some of the validation analyses. Hence, the power of the comparisons was reduced in the cluster validation. A second limitation is that, although numerous statistically significant differences were identified between the three clusters, it is important to note that, in clinical terms, the differences between groups were generally quite small in magnitude. Although our findings support real and meaningful differences among the three clusters using additional variables beyond the Static 2002R, the distinction among clusters was not reflected in the actuarial subscores. Additional research comparing the three identified clusters on the basis of variables that more clearly represent clinical and theoretical constructs of interest would be beneficial for further clarifying the unique needs and associated risks of these offenders.

Research that advances and integrates the fields of sex offender risk assessment and treatment provision by moving beyond the question of “what works?” and begins to address the more complex question of “what works and for whom?” is critical and necessary. Although sex offenders comprise a heterogeneous group, the current study proffers a cluster solution of three distinct groups. Developing typologies of sexual offenders is not a new undertaking in the field, but given the advances in establishing measures that comprise concisely and operationally defined items, producing an empirically-generated typology is more achievable. On sexual recidivism risk, the three clusters from this study fall on a continuum and represent degree rather than kind; however, cluster validation of these groups demonstrate that there are meaningful

historical, behavioral, and criminological differences among these three clusters. This cluster solution is differentiated on clinically relevant constructs and therefore could facilitate individualized treatment and management efforts, instrumental in the reduction of reoffending.

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Table 1:

*Demographic information regarding the study's sample*

Demographic variables	Total sample	Cluster 1 Low Risk	Cluster 2 Low-Mod Risk	Cluster 3 Mod-High Risk
Age at the time of assessment	36.8 (13.32)	48.7 (12.28)	32.4 (10.64)	37.9 (14.39)
Years of education	11.5 (2.53)	11.4 (2.67)	11.8 (2.46)	11.15 (2.30)
Unemployed	8.1% (28)	7.5% (11)	7% (10)	12.7% (7)
Single (marital status)	36.8% (127)	30.6% (45)	44.1% (63)	34.5% (19)
Index offence				
Pre-pubescent victims	37.4% (129)	38.1% (56)	34.3% (49)	43.6% (24)
Post-pubescent victims	26.1% (90)	22.4% (33)	33.6% (48)	16.4% (9)
Adult victims	26.1% (90)	26.6% (39)	22.4% (32)	34.5% (19)
Prior sexual offences	18.3% (63)	15% (22)	7.9% (11)	54.5% (30)

Means and standard deviations are reported, except for categorical variables where percentages are reported.

Table 2:

*List of clustering measures and methods producing a total of eight cluster solutions*

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Solution	Distance	Strategy	Method
1	Euclid	Hierarchic Clustering	Ward
2	Euclid	Hierarchic Clustering	Complete
3	Euclid	Hierarchic Clustering	Average
4	Manhattan	Hierarchic Clustering	Ward
5	Manhattan	Hierarchic Clustering	Complete
6	Manhattan	Hierarchic Clustering	Average
7	Euclid	Partitioning around Medoids	
8	Manhattan	Partitioning around Medoids	

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Table 4:

*Outcome of the cluster analysis and comparison among 3-cluster solution on the Static-2002R*

Static-2002 variables	Cluster 1 Low Risk	Cluster 2 Low-Mod Risk	Cluster 3 Mod-High Risk	<i>F</i> ( <i>df</i> )
<i>N</i>	147	143	55	
Total score on Static-2002R <sup>a,b,c</sup>	2.25 (2.15) -2 to 9	3.81 (1.98) -2 to 12	5.77 (3.27) -2 to 12	48.6*** (2,335)
Weight for age at release item <sup>a,b,c</sup>	-.10 (1.07) -2 to 2	1.45 (1.03) -2 to 2	0.77 (1.28) -2 to 2	73.9*** (2,338)
Persistence of sex offending subscale <sup>b,c</sup>	.23 (0.59) 0 to 3	.11 (0.48) 0 to 3	1.38 (0.93) 0 to 3	90.8*** (2,342)
Deviant sexual interest subscale <sup>c</sup>	.39 (0.63) 0 to 3	.35 (0.58) 0 to 2	.95 (0.91) 0 to 3	17.4*** (2,340)
Relationship to victim subscale <sup>b,c</sup>	.82 (0.70) 0 to 2	1.01 (0.70) 0 to 2	1.18 (0.80) 0 to 2	5.8** (2,339)
General criminality subscale <sup>b,c</sup>	.93 (0.85) 0 to 3	.86 (0.87) 0 to 3	1.56 (0.96) 0 to 3	13.7*** (2,342)

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ . Means, standard deviations, and range of scores are reported for each cluster.

Significant post-hoc means comparisons, using Bonferroni correction, are noted as follows:

<sup>a</sup>Significant difference between Low Risk and Low-Mod Risk groups.

<sup>b</sup>Significant difference between Low Risk and Mod-High Risk groups.

<sup>c</sup>Significant difference between Low-Mod Risk and Mod-High Risk groups

Table 5:

*Validation of the three-cluster solution using criminal history variables*

Criminal history variables	Cluster 1 Low Risk	Cluster 2 Low-Mod Risk	Cluster 3 Mod-High Risk	$F (df) / \chi^2$
Age at first conviction <sup>a,b</sup>	34.40 (16.76)	24.94 (11.01)	25.52 (15.12)	13.6*** (2,268)
Cormier-Lang nonviolent history score <sup>b,c</sup>	2.38 (5.76)	2.45 (7.52)	6.35 (5.82)	6.7** (2,3210)
Cormier-Lang violent history score <sup>b,c</sup>	2.02 (9.26)	1.17 (3.09)	4.94 (7.76)	5.6** (2,323)
Cormier-Lang sexual history score <sup>b,c</sup>	1.68 (9.30)	0.44 (1.98)	4.60 (5.23)	7.9*** (2,321)
Failure on prior conditional release	16.8%	18.8%	43.1%	16.0***

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ . Means and standard deviations are reported, except for categorical variables where percentages are reported. For chi-square values ( $\chi^2$ ),  $df = 2$ . For parametric comparisons, significant post-hoc means comparisons, using Bonferroni correction, are noted as follows:

<sup>a</sup>Significant difference between Low Risk and Low-Mod Risk groups.

<sup>b</sup>Significant difference between Low Risk and Mod-High Risk groups.

<sup>c</sup>Significant difference between Low-Mod Risk and Mod-High Risk groups

Table 6:

*Validation of the three-cluster solution using psychosocial development variables*

Psychosocial developmental variables	Cluster 1 Low Risk	Cluster 2 Low-Mod Risk	Cluster 3 Mod-High Risk	$F (df)$ / $\chi^2$
Childhood sex abuse	31%	28.5%	48.1%	7.1*
Childhood physical abuse	28.5%	26.6%	41.2%	3.9
Childhood neglect	6.8%	10.5%	20.0%	6.0*
Caregiver inconsistency	61.3%	50.9%	50.0%	3.2
CATS <sup>b</sup>	1.66 (2.07)	2.45 (2.43)	3.48 (2.73)	6.2** (2,152)
Teen alcohol problems <sup>b,c</sup>	29.6%	30.3%	51.9%	9.3**
Childhood aggression problem <sup>b,c</sup>	17.6%	24.0%	43.2%	11.1**
Suspended/expelled from school <sup>a,b</sup>	24.5%	44.1%	55.0%	13.7***
Childhood peer delinquency <sup>a,b</sup>	13.7%	25.4%	40.9%	14.1**
Early child maladjustment <sup>a,b,c</sup>	31.7%	47.2%	67.4%	16.9***
Arrested <16 years old <sup>a,b,c</sup>	7.3%	16.8%	38.6%	23.6***
Evidence of peer rejection <sup>a,b,c</sup>	27.7%	38.0%	50.0%	11.3*
Antisocial behavior scale (MSI-2) <sup>b</sup>	6.91 (4.51)	10.13 (8.70)	15.25 (8.69)	6.0** (2,72)
ADD/ADHD symptoms <sup>a,b</sup>	6.4%	16.4%	21.3%	8.9*
Age at masturbation onset	13.66 (3.16)	13.11 (2.47)	13.29 (2.91)	0.4 (2,106)
Age at first consensual sex	17.05 (3.78)	16.69 (4.33)	16.21 (3.32)	0.7 (2,239)
Number of sex partners	14.61 (27.95)	22.96 (54.06)	28.51 (57.88)	1.7 (2,252)

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ . Means and standard deviations are reported, except for categorical variables where percentages are reported. For chi-square values ( $\chi^2$ ),  $df = 2$ . Significant post-hoc means comparisons, using Bonferroni correction, are noted as follows:

<sup>a</sup>Significant difference between Low Risk and Low-Mod Risk groups.

<sup>b</sup>Significant difference between Low Risk and Mod-High Risk groups.

<sup>c</sup>Significant difference between Low-Mod Risk and Mod-High Risk groups

Table 7:

*Validation of the three-cluster solution using sexual attitudes and interests variables*

Sexual attitudes and interests variables	Cluster 1 Low Risk	Cluster 2 Low-Mod Risk	Cluster 3 Mod-High Risk	<i>F</i> ( <i>df</i> )
SSPI <sup>b,c</sup>	1.64 (1.13)	1.54 (1.22)	2.42 (1.37)	10.0*** (2,311)
Molester comparison scale (MSI-2)	16.41 (5.76)	14.81 (5.28)	15.67 (4.83)	0.7 (2,72)
Rapist comparison scale (MSI-2) <sup>b</sup>	9.28 (5.01)	10.87 (6.81)	15.92 (7.26)	4.9* (2,69)
Sexual obsessions scale (MSI-2) <sup>b</sup>	2.25 (2.23)	3.71 (3.34)	5.83 (3.69)	6.6** (2,72)
Emotional neediness scale (MSI-2) <sup>c</sup>	5.59 (4.25)	5.26 (4.07)	8.83 (4.65)	3.3* (2,72)
Pornography use (MSI-2)	0.97 (2.43)	0.74 (1.88)	0.58 (1.44)	0.2 (2,72)
Cognitive distortion immaturity scale (MSI-2)	3.94 (3.81)	3.68 (3.02)	5.00 (4.37)	0.6 (2,72)
Denial scale (MSI-2)	9.91 (4.78)	9.35 (5.98)	8.42 (4.54)	0.4 (2,72)
Justification scale (MSI-2)	2.59 (2.03)	2.87 (3.50)	1.58 (1.24)	1.0 (2,72)
Scheming scale (MSI-2) <sup>b,c</sup>	0.16 (0.45)	0.23 (0.92)	2.50 (3.18)	13.6*** (2,72)
Superoptimism scale (MSI-2) <sup>b,c</sup>	0.78 (1.26)	1.29 (1.40)	2.58 (2.31)	6.1** (2,72)
Treatment attitude index (MSI-2) <sup>b,c</sup>	4.19 (2.15)	4.28 (1.75)	6.50 (1.88)	6.7** (2,69)

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ . Means and standard deviations are reported. Significant post-hoc means comparisons, using Bonferroni correction, are noted as follows:

<sup>a</sup>Significant difference between Low Risk and Low-Mod Risk groups.

<sup>b</sup>Significant difference between Low Risk and Mod-High Risk groups.

<sup>c</sup>Significant difference between Low-Mod Risk and Mod-High Risk groups

Table 8:

*Validation of the three-cluster solution examining recidivism information*

Recidivism variables	Cluster 1	Cluster 2	Cluster 3	$\chi^2$
	Low Risk	Low-Mod Risk	Mod-High Risk	
Any Recidivism:	17.5% (31)	26.2% (45.1)	34% (23.9)	6.1*
Violent Recidivism:	9.5% (33.3)	11.5% (38.9)	20% (27.8)	2.0
Sexual Recidivism:	8.7% (34.4)	10.7% (40.6)	16% (25)	2.0

\* $p < .05$ . Percentage of cluster group who recidivated is reported with percentage of offenders within each recidivist group in parentheses. For chi-square values ( $\chi^2$ ),  $df = 2$ .

Figure 1:

*Distribution of Static-2002R scores for entire sample*

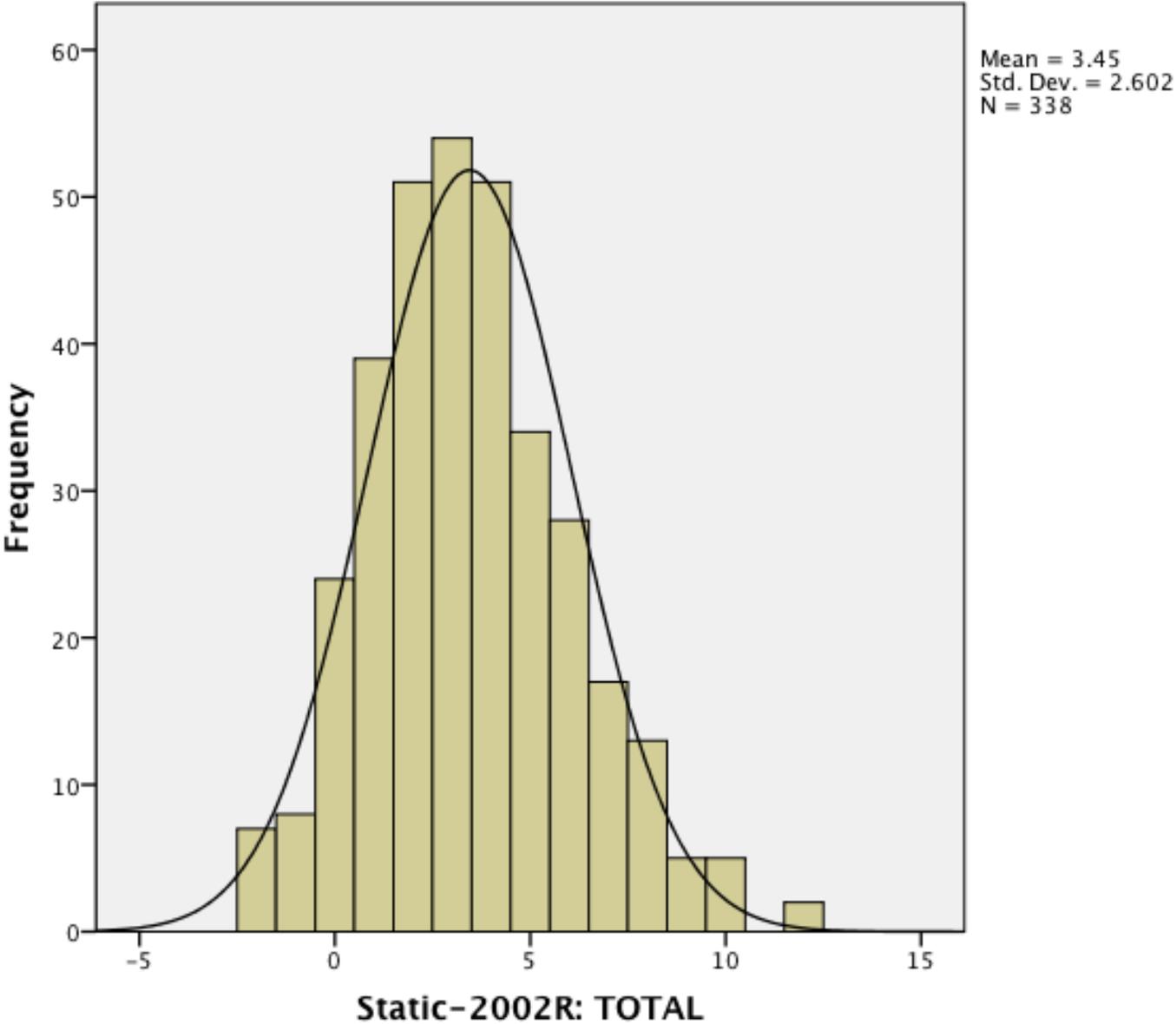


Figure 2:

*Conceptualization of the three-cluster solution based on the cluster validation.*

