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and Leslie-Maaïke Helmus³

Abstract

The most commonly used risk assessment tools for predicting sexual violence focus almost exclusively on static, historical factors (e.g., characteristics of prior offences). Consequently, they are assumed to be unable to directly inform the selection of treatment targets or evaluate change. In this article, we argue that this limitation can be mitigated by using latent variable models as a framework to link historical risk factors to the psychological characteristics of offenders. Accordingly, we conducted a factor analysis of the 13 nonredundant items from the two most commonly used risk tools for sexual offenders (Static-99R and Static-2002R) to identify the psychological information contained in these tools. Three factors were identified: (a) persistence/paraphilia, a construct related to sexual criminality, especially of the pedophilic type; (b) youthful stranger aggression, a construct centered on young age and offence seriousness; and (c) general criminality, a construct that reflected the diversity and magnitude of criminal careers. These constructs predicted sexual recidivism with similar accuracy, but only youthful stranger aggression and general criminality predicted nonsexual recidivism. These results indicate that risk tools for sexual violence are multidimensional, and support a shift from a focus on atheoretical risk markers to the assessment of psychologically meaningful constructs.

Keywords

risk assessment, recidivism, sexual offenders, Static-99R, Static-2002R, latent psychological constructs, factor analysis

Sexual crimes are among those that invoke the most public concern. Any sexual recidivism is disturbing, particularly when the public perceives that these crimes could, and should, have been prevented. Consequently, many countries have adopted procedures to assess offenders' risk of sexual recidivism and programs that aim to reduce this risk.

Empirically derived actuarial risk tools are commonly used with sexual offenders because they are objective, simple to score, and outperform unstructured professional judgment (Dawes, Faust, & Meehl, 1989; Gardner, Lidz, Mulvey, & Shaw, 1996; Grove, Zald, Lebow, Snitz, & Nelson, 2000; Hanson & Morton-Bourgon, 2009; Meehl, 1954; Mossman, 1994; Quinsey, Harris, Rice, & Cormier, 2006). The Static-99 (Hanson & Thornton, 2000) and Static-2002 (Hanson & Thornton, 2003) are the most popular actuarial scales for sexual offenders (Archer, Buffington-Vollum, Stredny, & Handel, 2006; Jackson & Hess, 2007; McGrath, Cumming, Burchard, Zeoli, & Ellerby, 2010). These scales are exclusively composed of static, historical markers that are not modifiable by treatment or intervention (Andrews & Bonta, 2010), such as the number of prior sex offences and victim characteristics. The popularity of these scales is likely related to the ease with which static factors can be reliably coded from file information. Although static factors predict recidivism, it is not obvious how evaluators

can use static, unchangeable risk factors to inform the selection of treatment targets or to evaluate change. Therefore, recent developments in actuarial assessment for sexual offenders have focused on factors that are theoretically related to recidivism and that are potentially changeable through deliberate intervention (e.g., sexual preoccupation, attitudes tolerant of sexual offending, negative peer associations; Mann, Hanson, & Thornton, 2010; Olver, Beggs Christofferson, Grace, & Wong, 2013). To emphasize the importance of changeable (not static) factors as targets for treatment and community supervision, the terms *dynamic risk factor* and *criminogenic need* are often used interchangeably (Andrews & Bonta, 2010).

It is not clear, however, that dynamic risk factors are the only markers of criminogenic needs: both static and dynamic risk factors predict recidivism because they are behavioral

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markers of latent enduring risk-relevant propensities (Beech & Ward, 2004; Mann et al., 2010). Offenders' risk-relevant propensities must have a certain stability because assessments conducted at time of release discriminate between recidivists and nonrecidivists comparably well in follow-up periods ranging from 2 to 10 years (Hanson, Babchishin, Helmus, & Thornton, 2013; Rice, Harris, & Lang, 2013). Nevertheless, offenders can and do change, such that offence history information decreases in relevance as it fades into the individual's past (Hanson, Harris, Helmus, & Thornton, 2014). In other words, even the most "static" risk indicators are actually time-dependent (i.e., dynamic) indicators. Consequently, the conceptualization and measurement of risk-relevant propensities may be best served by considering all risk factors within a latent variable model. The distinction between static and dynamic risk factors has heuristic value, but it is not clear that they are assessing fundamentally different psychological attributes.

Advantages of Latent Variable Models to Inform Assessment

Latent variable models are ubiquitous in psychology, particularly in intelligence testing (Lord & Novick, 1968) and trait theories of personality (Cattell & Kline, 1977). This approach assumes that observed patterns of behavior, thought, and emotion are caused by latent variables, such as extraversion, neuroticism, or various types of intelligence.

Because static risk factors are measures of observed behaviors specifically related to recidivism (e.g., demographic and offence history information), it should be possible to use them to infer the major latent psychological constructs responsible for recidivism risk (Brouillette-Alarie, Hanson, Babchishin, & Benbouriche, 2014). For example, an offender who has sexually abused numerous young, unrelated, male children (behavioral pattern) could be assumed to have enduring pedophilic sexual interests (Seto & Lalumière, 2001). Accordingly, the *Diagnostic and Statistical Manual of Mental Disorders—Fifth edition* (American Psychiatric Association, 2013) specifies that paraphilic disorders, such as pedophilic and exhibitionistic disorders, can be diagnosed based on behavioral history alone.

Over the past 10 years, many studies have sought to identify the latent psychological constructs in static, actuarial scales used with sexual offenders (Allen & Pflugrad, 2014; Barbaree, Langton, Blanchard, & Cantor, 2009; Barbaree, Langton, & Peacock, 2006; Boughner, 2010; Brouillette-Alarie & Proulx, 2013; Ennis, Hook, & Choy, 2011; Janka, Gallasch-Nemitz, & Dahle, 2011; Knight & Thornton, 2007; Langton, Barbaree, Hansen, Harkins, & Peacock, 2007; Pham & Ducro, 2008; Roberts, Doren, & Thornton, 2002; Seto, 2005; Walters, Deming, & Elliott, 2009). Most of these studies involved exploratory factor analyses of the Static-99

and Static-2002. All of them included at least some items from either scale; four of them factor analyzed the Static-99 (Allen & Pflugrad, 2014; Brouillette-Alarie & Proulx, 2013; Pham & Ducro, 2008; Walters et al., 2009); and three of them factor analyzed the Static-2002 (Boughner, 2010; Ennis et al., 2011; Langton et al., 2007).

All of these studies agreed on the presence of at least two factors: sexual criminality, also referred to as sexual deviancy, and general criminality/antisocial behavior. The sexual criminality factor typically included the following items: (a) numerous prior sex offences, (b) a high rate of sexual offending, (c) convictions for noncontact sexual offences, and (d) male victims. Surprisingly, the sexual criminality factor rarely included the other sexual victim items (having any unrelated victim, have a stranger victim). The general criminality factor typically included the following: (a) nonsexual violent crimes, (b) numerous prior sentencing occasions, (c) community supervision violations, and (d) a short period of time free prior to the index sexual offence. These two factors (sexual criminality and antisocial tendencies) constitute the broad domains most strongly associated with sexual crime and sexual recidivism (Doren, 2004; Hanson & Bussière, 1998; Hanson & Morton-Bourgon, 2005).

In addition to these two factors, other constructs have been identified in the Static-99 and 2002 items. Although there is no clear consensus on the number and nature of additional constructs, they seem to be mostly related to age, relationship history, and the sexual abuse of unrelated and stranger victims. The psychological features underlying these constructs are often described as detachment or immaturity. However, others have argued that this factor might be a statistical artefact related to age, or a categorical distinction between rapists and child molesters, rather than a psychologically meaningful construct (Brouillette-Alarie & Proulx, 2013; Knight & Thornton, 2007; Seto, 2005).

Although the aforementioned studies offered valuable insights on the latent constructs of static actuarial scales, nearly all of them used less than optimal statistical methods (see Table 1).

First, nearly all of the studies used Pearson product-moment correlations, despite their inadequacy to handle the dichotomous and ordinal variables found in actuarial scales (Brown & Benedetti, 1977; Flora & Curran, 2004; Holgado-Tello, Chacón-Moscoso, Barbero-García, & Vila-Abad, 2010; Kubinger, 2003). Second, very few studies investigated factor analysis extraction and rotation techniques, relying instead on the default SPSS parameters, that is, principal components extraction and orthogonal (varimax) rotation. Third, some studies had inadequate sample size (20 participants per variable; Costello & Osborne, 2005). Finally, very few studies explicitly organized the items to meet the statistical assumptions of nonredundancy and noncollinearity (Flora, LaBrish, & Chalmers, 2012).

Table 1. Methodological Characteristics of the Studies on the Latent Constructs of Actuarial Scales.

Study	Statistical method	Type of correlations	Extraction method	Rotation method	<i>n</i> ^a
Roberts et al. (2002)	Factor analysis	Pearson	Principal component analysis	Unspecified	393
Seto (2005)	Factor analysis	Pearson	Principal component analysis	Orthogonal (varimax)	215
Barbaree et al. (2006)	Factor analysis	Pearson	Principal component analysis	Orthogonal (varimax)	311
Knight and Thornton (2007)	Factor analysis	Pearson	Principal component analysis	Orthogonal (varimax)	569
Langton et al. (2007)	Factor analysis	Pearson	Principal component analysis	Orthogonal (varimax)	449
Pham and Ducro (2008)	Factor analysis	Pearson	Principal component analysis	Oblique (promax)	254
Barbaree et al. (2009)	Correlation with age	Pearson	N/A	N/A	393-468
Walters et al. (2009)	Factor analysis	Pearson	Principal component analysis	Orthogonal (varimax)	508
Janka et al. (2011)	Factor analysis	Pearson	Principal component analysis	Orthogonal (varimax)	612
Boughner (2010)	Factor analysis	Pearson	Principal component analysis	Orthogonal (varimax)	309
Ennis et al. (2011)	Factor analysis	Unspecified	Unspecified	Unspecified	225
Brouillette-Alarie and Proulx (2013)	Factor analysis	Pearson	Unweighted least squares	Oblique (oblimin)	679
Allen and Pflugradt (2014)	Nonlinear factor analysis (normal ogive harmonic analysis robust method)	N/A	N/A	Oblique (promax)	451

a. Relates the *n* used in the main latent construct analysis.

Study Objectives

The current study aimed to identify the latent psychological constructs of the Static-99R and Static-2002R, using accepted factor analysis procedures. As well, we examined the construct validity of the resulting factors by examining their association with recidivism, the criteria these measures were intended to predict. Although the STATIC instruments do not cover all the important predictors of sex offenders' recidivism (e.g., they neglect dynamic risk predictors), their widespread use ensures that this study will be of relevance to the numerous clinicians and evaluators currently using these scales.

Method

Measures

Static-99R. Static-99R (Hanson & Thornton, 2000; Helmus, Thornton, Hanson, & Babchishin, 2012) is an empirically derived actuarial risk assessment tool designed to predict sexual recidivism in adult male sexual offenders using commonly available information (see also www.static99.org). It has 10 items related to demographic (e.g., age), criminal history (e.g., past sexual offences), and victim choice (e.g., any male victims). Its total score (ranging from -3 to 12)

can be used to place offenders in one of four risk categories: low (-3 to 1), moderate to low (2 to 3), moderate to high (4 to 5), and high (6+). The Static-99R items are identical to Static-99 with the exception of updated age weights.

Static-2002R. Similar to Static-99R, Static-2002R (Hanson & Thornton, 2003; Helmus et al., 2012) is an empirical actuarial risk assessment tool for adult male sexual offenders (see also www.static99.org). It has 14 items grouped into five main subscales: age at release, persistence of sex offending, sexual deviance, relationship to victims, and general criminality. The total score (ranging from -2 to 14) can be used to place offenders in one of five risk categories: low (-2 to 2), low to moderate (3 to 4), moderate (5 to 6), moderate to high (7 to 8), and high (9+). The Static-2002R items are identical to Static-2002 with the exception of updated age weights.

The Static-2002 was developed to improve coding consistency, conceptual clarity, and predictive accuracy compared with the Static-99. Although the Static-2002 was more accurate than the Static-99 (Hanson, Helmus, & Thornton, 2010), revising the Static-99 age weights increased its predictive accuracy such that there was no longer a meaningful difference between Static-99R and Static-2002R (Babchishin, Hanson, & Helmus, 2012). Both scales,

however, contribute incrementally to the prediction of sexual recidivism (Babchishin et al., 2012; Lehmann, Hanson, et al., 2013).

Item Preparation. Initial item preparation was required before integrating items from both scales in the factor analysis. First, the “age at release” items from both scales were removed in favor of age at release in years as a continuous variable without cutoffs. Age was then inverted to provide intuitive factor loadings (given the expected negative relationship between age and risk). Second, the “any unrelated victims” and “any stranger victims” items were combined into an item on a 3-point scale: 0 = *no unrelated or stranger victim*, 1 = *at least one unrelated victim and no strangers*, 2 = *at least one stranger victim*. Although the unrelated victim and stranger victim items are listed separately on the static coding forms, these items are actually both part of the same dimension because victims who are strangers are automatically coded as unrelated as well, hence the 2 points for any stranger victims (Harris, Phenix, Hanson, & Thornton, 2003). Third, the Static-2002R items “any prior involvement with the criminal justice system” and “prior sentencing occasions for anything” were combined because they were inherently part of the same continuum: 0 = *no prior involvement with the criminal justice system*, 1 = *at least one prior charge, but less than 3 prior sentencing occasions*, 2 = *3 to 13 prior sentencing occasions*, 3 = *14+ prior sentencing occasions*. Fourth, when identical items were present in both scales (e.g., any male victims), they were only counted once. Fifth, very similar items with slightly different coding rules (e.g., prior nonsexual violence [Static-99R]/any prior nonsexual violence sentencing occasion [Static-2002R]) were summed.

Finally, variables were scanned for cases of collinearity with tetrachoric/polychoric correlations ($r > .80$) because high collinearity makes the empirical inversion of correlation matrices unstable (Flora et al., 2012). When collinearity cases were found (e.g., high rate of sexual offending [Static-2002R]/prior sex offences [Static-99R/2002R]), the items were summed. See the appendix for the full list of redacted items.

Samples

This study used data sets from a larger project involving the renorming of the Static-99 (for additional information on the samples and data preparation, see Helmus, 2009). The sample, therefore, comprises a nonexhaustive collection of contemporary validation studies of the Static-99. Previous research has observed some variations in findings depending on the extent to which the samples were preselected on risk-relevant characteristics (Helmus, 2009; Helmus & Thornton, in press); nonetheless, the samples should be considered broadly representative of typical settings in

which these scales are used. To be included in this study, the sample required information on all items included in the factor analysis (which were derived from Static-99R and Static-2002R items). In total, seven samples were available ($n = 2,569$).

Table 2 provides descriptive information for the studies included. Four samples were from Canada; the remaining samples were from the United States ($k = 1$), the United Kingdom ($k = 1$), and Denmark ($k = 1$). The average age at release was 39 years ($SD = 12$). Three samples consisted of fairly routine correctional samples (i.e., relatively unselected, expected to be fairly representative of the population of convicted sex offenders), either from prisons (Bigras, 2007; Boer, 2003) or community supervision (Hanson, Harris, Scott, & Helmus, 2007). One sample was a treatment sample (Harkins & Beech, 2007), whereas the rest were more specialized, including a sample evaluated for civil commitment (Knight & Thornton, 2007), receiving specialized forensic psychiatric evaluations (Bengtson, 2008), or detained in federal prison until the expiration of their sentence (Haag, 2005). In the full sample, the average Static-99R score was 3.1 ($SD = 2.6$) and the average Static-2002R score was 4.3 ($SD = 2.7$).

All samples used official criminal records to measure recidivism: four samples used charges as the recidivism criteria and three used convictions. Offenders were followed up for an average of 8.0 years ($SD = 4.9$). Three recidivism outcomes were examined: sexual (hands-on and hands-off sexual crimes), nonsexual violence (any violent crime except those sexual in nature), and any recidivism (which includes sexual, nonsexual violence, and all nonviolent offences). All samples reported data on all three recidivism outcomes, with the exception of Haag (2005), which had data only on sexual recidivism. Although recidivism outcomes were subject to slight variations between studies, recoding efforts were made to ensure a reasonable level of coherence between samples (see Helmus, 2009, for additional information on recidivism coding).

Analytical Strategy

Measurement Model. Exploratory factor analysis (Mplus v6.12; Muthén & Muthén, 2010) was used to identify the psychological constructs of the Static-99R and Static-2002R. Exploratory factor analysis was favored over multivariate item response theory models (e.g., Allen & Pflugradt, 2014) because factor analysis yields more intuitive results, and can outperform item response theory models when appropriate correlation coefficients are used (Knol & Berger, 1991; Parry & McArdle, 1991).

Correlation Matrix. Tetrachoric and polychoric correlations were used because they are less sensitive to the restriction of range artifacts commonly observed when Pearson product-moment correlations are used with dichotomous or

Table 2. Sample Descriptives.

Variables/studies	Bengtson (2008)	Bigras (2007)	Boer (2003)	Haag (2005)	Hanson et al. (2007)	Harkins and Beech (2007)	Knight and Thornton (2007)	Total sample
<i>n</i>	308	425	296	190	702	182	466	2,569
Type of sample	Forensic psychiatric evaluations	Routine CSC	Routine CSC	Article I. Detained until end of sentence	Routine community supervision	Prison and community treatment	Civil commitment	N/A
Country	Denmark	Canada	Canada	Canada	Canada	United Kingdom	United States	N/A
Release period	1978-1995	1995-2004	1976-1994	1995	2001-2005	1994-1998	1957-1986	1957-2005
Median year of release	1986	1999	1990	1995	2002	1995	1970	1995
Recidivism criteria	Charges	Charges	Convictions	Convictions	Charges	Convictions	Charges	N/A
Article II. Follow-up in years [<i>M</i> (<i>SD</i>)]	16.2 (4.3)	4.6 (1.9)	13.3 (2.1)	7.0 (0.0)	3.5 (1.0)	10.4 (1.1)	8.6 (2.6)	8.0 (4.9)
Sexual recidivism rate ^a (%)	34.1	5.9	8.8	24.7	8.1	13.7	28.1	16.2
Nonsexual violent recidivism rate ^a (%)	23.4	9.9	17.6	N/A	8.8	10.4	24.9	15.3
Any recidivism rate ^a (%)	64.6	23.3	51.7	N/A	27.9	35.2	54.9	40.2
Article III. Age at release in years [<i>M</i> (<i>SD</i>)]	32.5 (10.4)	42.7 (11.9)	41.2 (12.5)	36.7 (9.7)	41.6 (13.2)	43.5 (12.7)	36.1 (11.4)	39.4 (12.5)
Static-99R [<i>M</i> (<i>SD</i>)]	3.8 (2.4)	2.1 (2.3)	2.8 (2.8)	4.1 (2.2)	2.4 (2.4)	2.1 (2.6)	4.6 (2.4)	3.1 (2.6)
Static-2002R [<i>M</i> (<i>SD</i>)]	4.6 (2.4)	3.4 (2.5)	3.9 (2.7)	5.7 (2.3)	3.5 (2.5)	3.6 (2.8)	6.1 (2.5)	4.3 (2.7)

Note. CSC = Correctional Service of Canada.

a. Variable follow-up.

ordinal data (Kubinger, 2003). Mplus was used to compute tetrachoric and polychoric correlation coefficients from the complete, aggregated sample. As a preliminary step, we also constructed a correlation matrix based on a meta-analytic average of the tetrachoric and polychoric correlations within each sample. However, the meta-analytically derived matrix provided essentially equivalent results; consequently, the matrix based on the complete sample was used for the sake of simplicity.

Factor Extraction and Rotation. Factors were extracted using the weighted least square means- and variance-adjusted method, as recommended for exploratory factor analysis of dichotomous and ordinal data (Muthén & Muthén, 2010). Because the resulting factors were expected to be correlated, they were rotated using an oblique rotation method (Geomin).

Factor Retention. The number of factors retained was based on four criteria: (a) Kaiser's criterion (i.e., eigenvalues > 1.00; Kaiser, 1960); (b) scree plot (Cattell, 1966); (c) parallel analysis (Horn, 1965); and (d) Velicer's minimum average partial test (MAP test; Velicer, 1976). Each factor retention method has advantages and disadvantages, and using multiple factor retention methods is preferable (Henson & Roberts, 2006). Of the four retention methods, however, parallel analysis and the MAP test are the least subjective, and were given the most weight in decision making (O'Connor, 2000; Schmitt, 2011).

Factor Structure Fit. After the number of factors to retain has been determined, the overall factor structure fit was assessed

using three fit indices. The root mean square error of approximation (RMSEA) assessed the lack of fit in a factor structure relative to a perfect factor structure (Tabachnick & Fidell, 2007); generally, a RMSEA should not exceed .06 (Hu & Bentler, 1999). The comparative fit index (CFI) assessed the factor structure fit relative to a baseline model where there are no relationships between items (Brown, 2006); generally, a CFI of .95 or greater indicates good fit (Hu & Bentler, 1999). Finally, the Tucker-Lewis Index (TLI) assessed the factor structure fit relative to a baseline model while taking into account the number of parameters (Tucker & Lewis, 1973); a TLI of .95 or greater indicates good fit (Hu & Bentler, 1999).

Criteria for Factor Inclusion. The chosen criterion for factor inclusion was factor loadings of at least .40 (Stevens, 1992). The magnitude of factor loadings was preferred to their statistical significance because the large number of participants made even small factor loadings statistically significant, leading to implausible cross-loadings.

Predictive Validity Analyses. The association between the factors identified by the factor analysis and different types of recidivism was tested using Cox regression (Allison, 1984) and Harrell's *c* (Harrell, Califf, Pryor, Lee, & Rosati, 1982).

Cox regression analyses provide hazard ratios that are not constrained by a fixed follow-up time. The effect of predictor variables (covariates) are reported as hazard ratios (in log units). For example, a hazard ratio of 1.50 indicates that each one-score increase on the factor increases the hazard rate of recidivism by 50%. Cox regression was also used to

Table 3. Correlations Between Static Risk Items ($n = 2,569$).

Items	1	2	3	4	5	6	7	8	9	10	11	12	13
1	—	—	—	—	—	—	—	—	—	—	—	—	—
2	.32	—	—	—	—	—	—	—	—	—	—	—	—
3	-.09	.62	—	—	—	—	—	—	—	—	—	—	—
4	-.11	.09	.47	—	—	—	—	—	—	—	—	—	—
5	-.18	.19	.34	.23	—	—	—	—	—	—	—	—	—
6	-.16	.35	.46	.32	.57	—	—	—	—	—	—	—	—
7	.22	.32	.47	.09	-.07	.00	—	—	—	—	—	—	—
8	.30	.45	.52	.13	.01	.13	.76	—	—	—	—	—	—
9	.53	.37	.12	-.02	.16	.17	.10	.22	—	—	—	—	—
10	.31	.18	-.02	-.21	-.23	-.27	.27	.30	.21	—	—	—	—
11	.29	.39	.41	.28	.06	.35	.26	.41	.48	.32	—	—	—
12	.04	.35	.54	.13	.00	.06	.80 ^a	.72	.00	.18	.22	—	—
13	.10	.17	.22	-.07	-.17	-.20	.65	.57	-.07	.28	.16	.74	—

Note. Tetrachoric and polychoric correlations presented. 1 = age at release in years (reversed); 2 = juvenile sex arrest; 3 = high rate of sexual offending/prior sex offences; 4 = noncontact sex conviction; 5 = male victim; 6 = two or more young victims, one unrelated; 7 = breach of conditional release; 8 = few years free prior to index; 9 = never lived with a lover for at least 2 years; 10 = index nonsexual violence; 11 = unrelated/stranger victim; 12 = prior sentencing; 13 = prior nonsexual violence.

a. The nonrounded value of this correlation is .796. It does not meet our multicollinearity threshold of .80.

examine the incremental validity between the factors. If the 95% confidence interval of the hazard ratio did not include 1.00, the factor added incremental validity to the other scale included in the model. Cox regression analyses were run with SPSS (v20), with samples used as strata to control for differences in recidivism base rates and differences in the shape of the survival functions across samples.

Predictive accuracy was also assessed with Harrell's c using the survival program in R (Therneau, 2011). Harrell's c index is similar to the area under the curve (AUC) from receiver operating characteristics curve analysis (Swets, Dawes, & Monahan, 2000). Specifically, it estimates the probability that of two randomly chosen offenders, the one with the higher risk score will reoffend before the other. In contrast, AUCs do not take into account time to recidivism. Harrell's c is an ordinal statistic that can be compared across different scaling of the predictor variable, and does not require a fixed follow-up time. Similar to the AUC, if the 95% confidence interval includes .50, the variable does not significantly predict recidivism, with Harrell's c values of 1.00 (or 0) indicating perfect prediction.

Results

Exploratory Factor Analysis

Exploratory factor analysis was performed on the 13 nonredundant items from the Static-99R and Static-2002R (see the appendix). The correlation matrix is presented in Table 3, with correlations ranging from $-.25$ to $.80$ ($Mdn = .22$).

The four procedures used to determine the number of factors yielded consistent results, with all of the retention

methods suggesting a three-factor structure (see Figure 1). This factor structure accounted for 51.4% of the prerotation variance. Variance was well distributed between the factors such that no single factor explained a disproportionately large amount of variance.

The goodness-of-fit of the three-factor solution was good, with a RMSEA of .049 (90% confidence interval = .044-.054), a CFI of .980, and a TLI of .964. The factor loadings are presented in Table 4. All of the items loaded on at least one factor, and only one item (age) loaded on multiple factors.

The first factor consisted of five items, presented in decreasing order of loadings: (a) two or more young victims, one unrelated; (b) high rate of sexual offending/prior sex offences; (c) male victim; (d) noncontact sex conviction; and (e) older age at release (in years). Except for age, all of these items address sexual criminality, especially of the pedophilic type. It was therefore labeled "persistence/paraphilia." The internal consistency of persistence/paraphilia was low ($\alpha = .45$), and removing age increased the internal consistency to α of .65. Considering that age also had the lowest factor loading ($\Lambda = -.40$, only just meeting our criteria for retention) among the included variables and also had a much higher loading on the second factor (described below), it was removed from this factor.

The second factor consisted of five items, in decreasing order of loadings: (a) never lived with a lover for at least 2 years, (b) younger age at release, (c) unrelated/stranger victim, (d) index nonsexual violence, and (e) juvenile sex arrest. This factor lacked face validity, being a mix of demographics, victim relationship information, and nonsexual

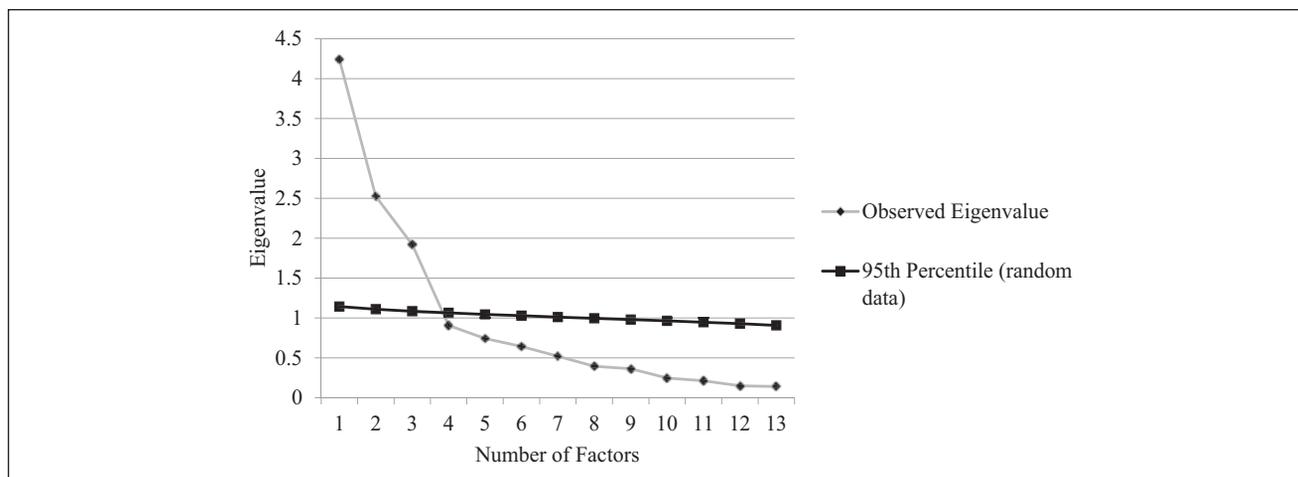


Figure 1. Scree plot (13 items) with randomly generated eigenvalues from the parallel analysis (95th percentile). The number of factors above the line of randomly generated eigenvalues indicates the number of factors that should be retained based on parallel analysis.

violence. Its internal consistency was low ($\alpha = .50$) and could not be improved by item deletion. We labeled it (unconvincingly) “youthful stranger aggression.”

The third factor consisted of four items, in decreasing order of loadings: (a) prior sentencing, (b) prior nonsexual violence, (c) breach of conditional release, and (d) few years free prior to index. It was internally consistent ($\alpha = .78$). Because it is easily interpreted as reflecting the magnitude and diversity of criminal careers, it was labeled “general criminality.”

As expected, the identified factors were all moderately correlated. Persistence/paraphilia had a correlation of .32 ($p < .001$) with youthful stranger aggression and .28 ($p < .001$) with general criminality. The correlation between youthful stranger aggression and general criminality was of .29 ($p < .001$).

Predictive Validity Analyses

Predictive validity analyses were conducted to offer further insight into the nature of the extracted factors. Factor scores were computed directly from the items rather than standardized factor scores to facilitate replication by clinicians and evaluators. Factor scores were simply equal to the sum of their corresponding items. All variables (including age) were coded according their original Static-99R/Static-2002R rules, so that items would make equivalent contributions to raw hazards for sexual recidivism risk. When items had different but similar scorings in both Static-99R/2002R, the 2002R definitions were favored. In the predictive validity analyses, persistence/paraphilia was the sum of (a) prior sentencing occasions for sexual offences (Static-2002R); (b) rate of sexual offending (Static-2002R); (c) any sentencing occasion for noncontact sex offences (Static-2002R);

(d) any male victim (Static-2002R); (e) young, unrelated victims (Static-2002R), and ranged from 0 to 7. Youthful stranger aggression was the sum of (a) ever lived with (Static-99R), (b) age at release (Static-2002R), (c) any unrelated victim (Static-2002R), (d) any stranger victim (Static-2002R), (e) index nonsexual violence (Static-99R), (f) any juvenile arrest for a sexual offence and convicted as an adult for a separate sexual offence (Static-2002R), and ranged from -2 to 7. General criminality was the sum of (a) any prior involvement with the criminal justice system (Static-2002R), (b) prior sentencing occasions for anything (Static-2002R), (c) any prior nonsexual violence sentencing occasion (Static-2002R), (d) any community supervision violation (Static-2002R), (e) years free prior to index sex offence (Static-2002R), and ranged from 0 to 6.

Compared with rapists (sexual offenders against adults), child molesters had higher persistence/paraphilia, and lower scores for youthful stranger aggression and general criminality scores.

All three factors were significantly, positively, and uniquely associated with sexual recidivism, with similar predictive accuracy (see Table 5). Moreover, each factor added incremental validity to the prediction of sexual recidivism. For nonsexual violent recidivism and any recidivism, only youthful stranger aggression and general criminality were positively and significantly associated with these outcomes. In the bivariate analyses (Table 6), persistence/paraphilia was not significantly related to nonsexual violent or general recidivism; however, in the multivariate analyses (Table 5), the incremental effect of persistence/paraphilia was significantly negative (i.e., higher persistence/paraphilia scores were associated with less nonsexual recidivism, after controlling for the other factors).

Table 4. Rotated Factor Loadings ($n = 2,569$).

Items	Factor 1 (Persistence/ paraphilia)	Factor 2 (Youthful stranger aggression)	Factor 3 (General criminality)
	Factor loadings, Λ (SE)		
1. Age at release in years (reversed)	-.40 (.04)^a	.77 (.03)	-.02 (.01)
2. Juvenile sex arrest	.34 (.08)	.45 (.05)	.15 (.11)
3. High rate of sexual offending/prior sex offences	.70 (.08)	.02 (.03)	.34 (.12)
4. Noncontact sex conviction	.55 (.03)	-.06 (.04)	-.00 (.05)
5. Male victim	.66 (.04)	-.08 (.04)	-.23 (.08)
6. Two or more young victims, one unrelated	.82 (.03)	.01 (.02)	-.25 (.11)
7. Breach of conditional release	-.05 (.12)	.18 (.04)	.83 (.05)
8. Few years free prior to index	.04 (.10)	.35 (.04)	.68 (.07)
9. Never lived with lover for at least 2 years	.00 (.00)	.84 (.03)	-.27 (.06)
10. Index nonsexual violence	-.39 (.05)	.46 (.04)	.23 (.04)
11. Unrelated/stranger victim	.22 (.05)	.56 (.02)	.04 (.08)
12. Prior sentencing	.07 (.13)	-.05 (.04)	.93 (.05)
13. Prior nonsexual violence	-.26 (.12)	-.01 (.02)	.86 (.02)
Eigenvalues	4.24	2.52	1.92
Percent of variance accounted	24.3	14.5	12.6
Factor score ^b [M (SD): Whole sample	1.1 (1.5)	2.5 (2.0)	2.3 (1.9)
Factor score ^b [M (SD): Rapists ($n = 811$)	0.7 (1.2)	3.3 (1.7)	3.1 (1.9)
Factor score ^b [M (SD): Child molesters ($n = 980$)	1.3 (1.6)	1.6 (1.9)	2.0 (1.8)

Note. Rotation method: Geomin. Factor loadings equal or superior to .40 are in bold.

a. Age at release in years (reversed) was removed from the persistence/paraphilia factor following internal consistency analyses.

b. Factor scores were computed directly from the items rather than standardized factor scores.

Table 5. Relation Between Factors and Recidivism (Cox Regression).

Article IV. Type of recidivism (n recidivists/total n)	B	SE	Wald	Hazards ratio [95% confidence interval]
Sexual recidivism (416/2,566)				
Persistence/paraphilia	.17	.03	35.53	1.19 [1.12, 1.25]
Youthful stranger aggression	.17	.03	34.84	1.19 [1.12, 1.26]
General criminality	.17	.03	30.62	1.18 [1.12, 1.26]
$\chi^2 = 152.18$, -2 lower limit = 4598.09				
Nonsexual violent recidivism (344/2,196)				
Persistence/paraphilia	-.21	.04	27.70	0.81 [0.75, 0.88]
Youthful stranger aggression	.29	.03	72.53	1.34 [1.25, 1.43]
General criminality	.35	.03	112.45	1.42 [1.33, 1.52]
$\chi^2 = 253.55$, -2 lower limit = 3717.86				
Any recidivism (957/2,378)				
Persistence/paraphilia	-.08	.02	12.98	0.92 [0.88, 0.96]
Youthful stranger aggression	.21	.02	124.69	1.24 [1.19, 1.28]
General criminality	.35	.02	308.34	1.41 [1.36, 1.47]
$\chi^2 = 583.85$, -2 lower limit = 10235.36				

Note. Persistence/paraphilia does not contain age. Sample used as strata. B presents the unique contribution of each variable, while holding the others constant. All the predictors and models were significant at $p < .001$.

Discussion

The aim of the current article was to empirically identify the latent constructs in two commonly used static actuarial

scales for sexual offenders (Static-99R, Static-2002R), and infer their psychological meaning with construct validity analyses. Three factors were found: persistence in sexual crimes/paraphilia, youthful stranger aggression,

Table 6. Predictive accuracy of the factors (Harrell's *c*).

	Type of recidivism (<i>n</i> recidivists/total <i>n</i>)		
	Sexual recidivism (416/2,569)	Nonsexual violent recidivism (344/2,360)	Any recidivism (957/2,379)
	Harrell's <i>c</i> [95% confidence interval]		
Persistence/paraphilia	.61 [.54, .67]	.53 [.47, .60]	.52 [.48, .56]
Youthful stranger aggression	.61 [.54, .68]	.68 [.61, .74]	.65 [.61, .69]
General criminality	.63 [.56, .69]	.69 [.62, .75]	.69 [.65, .73]
Total score	.68 [.61, .74]	.68 [.62, .75]	.70 [.65, .74]

Note. Persistence/Paraphilia does not contain age. Sample used as strata. Significant relationships are in bold and are based on the confidence interval (cannot include .50).

and general criminality. Persistence/paraphilia exclusively contained items related to sexual criminality, while general criminality, as its name implies, contained items related to general (largely nonsexual) criminality. Youthful stranger aggression was not clearly defined, containing items related to nonsexual violence, relationship to victims, and age. Overall, the extracted factors in the current study were very similar in nature and in content to those found in earlier studies, regardless of the variations in statistical procedures and sample size.

Although the three identified factors were positively correlated, their predictive validity differed. They all predicted sexual recidivism with similar accuracy, justifying their inclusion in the scales from which they came. However, they did not equally predict nonsexual violent recidivism and any recidivism. Only youthful stranger aggression and general criminality predicted these types of recidivism, not persistence/paraphilia. The latter even had a suppressor effect when other constructs were taken into account.

Previous research has shown that child molesters are unlikely to commit nonsexual violent crimes; Hanson, Scott, and Steffy (1995), for example, found that the nonsexual violent recidivism rate of child molesters was of 1% over 15 to 30 years, compared with 33% for nonsexual criminals. In contrast, their sexual recidivism rate was 35%, compared with 1.5% for nonsexual offenders. Therefore, it is not surprising that high scores on persistence/paraphilia, a factor strongly defined by sex offences against children, reduced the risk of committing nonsexual recidivism in these samples, after controlling for the other constructs.

Despite our limited item pool and the small number of variables per construct, the predictive validity of the factors was as large or larger than that commonly observed in other areas of personality assessment. For the prediction of sexual recidivism, our three factors had a median point-biserial correlation of .21 (ranging from .16 to .24); of .25 (ranging from .01 to .29) for the prediction of nonsexual violent recidivism; and of .36 (ranging from .10 to .39) for the

prediction of any recidivism. In comparison, meta-analyses have found that the bivariate effect sizes of the Big Five personality traits predicting job performance ranged from .00 to .13 (*Mdn* = .05; Barrick & Mount, 1991) and from .00 to .27 for coping (*Mdn* = .11; Connor-Smith & Flachsbart, 2007).

Interpreting the Extracted Factors

Persistence in Sexual Crimes/Paraphilia. Sexual criminality factors found in earlier studies were usually interpreted in terms of deviant sexual interests (Allen & Pflugrad, 2014; Barbaree et al., 2009; Doren, 2004; Janka et al., 2011; Roberts et al., 2002; Walters et al., 2009). This conceptualization does fit the paraphilia aspect of our construct, highlighted by items like “noncontact sex conviction,” “male victim,” and “two or more young victims, one unrelated.” It is also consistent with our finding that child molesters scored higher on this dimension than rapists, as deviant sexual interests are more common among sexual offenders against children than among sexual offenders against adults.

It is likely, however, that this dimension measures more than paraphilia because it was highly related to persistence in sexual crimes. Although persistence is inherently related to problematic sexuality, it is quite possible to have deviant sexual interests without acting on them, or having them interfere with prosocial functioning (i.e., the *DSM-5* distinction between paraphilia and paraphilia-related disorder; American Psychiatric Association, 2013). Those individuals with deviant sexual interests who engage in repetitive sexual crimes are likely to have additional risk-relevant characteristics, such as sexual preoccupations (Långström & Hanson, 2006), sexual coping, (Cortoni & Marshall, 2001), or even impulsivity. These psychological features in themselves are strongly associated with sexual recidivism (Mann et al., 2010) and, therefore, persistence. In absence of external measures of these constructs, these interpretations could not be validated in the current study.

General Criminality. General criminality factors, for their part, were usually interpreted in terms of antisocial behavior and/or psychopathy by previous studies (Allen & Pflugrad, 2014; Barbaree et al., 2009; Barbaree et al., 2006; Doren, 2004; Janka et al., 2011; Seto, 2005; Walters et al., 2009), and our findings support these previous interpretations. The psychological features associated with antisocial personality disorder/psychopathy are a pervasive pattern of disregard for the right of others (and society), deceitfulness, impulsivity, lack of empathy, narcissism, and boldness (American Psychiatric Association, 2013; Cleckley, 1941; Hare, 2003; Patrick, Fowles, & Krueger, 2009). These psychological features—especially their core (disregard for the rights of others)—act as excellent catalysts for the actualization of illegal sexual urges, or any illegal urge for that matter, which would explain why antisocial constructs predict both sexual and nonsexual recidivism. Consistent with previous research (Brouillette-Alarie & Proulx, 2013), rapists scored higher on this dimension than did child molesters.

Youthful Stranger Aggression. Although the first two factors were intuitively interpreted, “youthful stranger aggression” was not. It lacked face validity and internal consistency; furthermore, it did not have a predictive pattern that helped elucidate its meaning. It contained items related to age, intimate relationship history, relationship to sexual offence victims, nonsexual violent crimes, and juvenile sex arrests. Multiple interpretations were suggested by earlier studies for factors similar in content to youthful stranger aggression. However, as previously mentioned, very few are empirically supported. This factor was first described in terms of emotional detachment (Roberts et al., 2002). This interpretation, however, fails to cover age-related items, and was interpreted in absence of any convergent validity analyses. Other researchers have suggested that this factor is a result of behavioral differences between rapists and child molesters (Knight & Thornton, 2007), as rapists are both more likely to assault strangers and be younger than child molesters (Bard et al., 1987; Hanson, 2002). Although we found that rapists scored higher than child molesters on this factor, it did not disappear when we examined the factor structure in separate groups of rapists and child molesters.

One plausible interpretation is that this factor simply represents a period in the life of sexual offenders, when they are young adults (approximately 18-25 years old). Being young, they are unlikely to be involved in long-term intimate relationships or to have their own children. Consequently, if they are going to offend sexually, they are most likely to offend against strangers or other unrelated victims. Given that sexual offences against strangers often involve coercion (Knight & Thornton, 2007), the probability of having assault charges as part of the index offence is

increased. Such an interpretation would apply to both child molesters and rapists, and covers most of the items except “juvenile sex arrest.” The latter’s presence in the factor could simply be a by-product of record keeping and surveillance policies; early onset sexual offenders with juvenile records are more likely to be closely monitored as young adults, and juvenile records are most likely to be available when they are in the recent past.

An argument against the age interpretation is that when we conducted factor analyses that removed the correlated sociodemographic items of “age” and “never lived with a lover for at least 2 years,” we still found that fit indices favored a three-factor solution. Furthermore, the reduced third factor consisted of the remaining items from the youthful stranger aggression dimension identified in the complete set of items.

Another direction for interpreting the youthful stranger aggression factor is to focus on aggression. More specifically, Lehmann et al. have identified a distinct hostility/sexualized aggression dimension that can be inferred from the crime scene behaviors of child molesters (Lehmann, Goodwill, Hanson, & Dahle, 2014), stranger rapists (Lehmann, Goodwill, et al., 2013), and acquaintance rapists (Lehmann, Goodwill, Hanson, & Dahle, in press). Consistent with previous research showing an association between early onset and the seriousness of violent offending (Moffitt, 1993; Yessine & Bonta, 2008), Lehmann et al. (2014) found that the sexualized aggression dimension was negatively correlated with offender age. Consequently, further research should examine the extent to which the youthful stranger aggression dimension identified in the current study relates to psychological constructs such as sexual sadism and hostility toward women.

It is also possible that the youthful stranger aggression factor is more related to detection than to any psychologically meaningful construct. Overtly violent sexual assaults by strangers match the public’s prototypical of a sexual offence, and such offences are more likely to be reported to authorities than sexual offences involving family members or nonviolent coercion (e.g., Fisher, Daigle, Cullen, & Turner, 2003). This explanation, however, does not account for the association of this factor with age.

Another question that arises from this article’s results is why should an empirical three-factor model be favored over a more elegant two-factor model, consisting of only sexual and general criminality? Although we would have preferred a solution more in line with previous conceptual divisions (Brouillette-Alarie et al., 2014), we were unable to identify a satisfactory two-factor solution by removing items, combining items, or restricting analyses to subgroups of rapists and child molesters. Consequently, we interpret the current empirical findings as suggesting that there are more than two substantive dimensions related to sexual offender recidivism risk contained in these static actuarial scales.

The meaning of the third factor remains elusive. Whereas there is a sufficient body of evidence to support paraphilia/persistence and general criminality as clinically relevant dimensions for sexual offenders, the same cannot be said of our youthful stranger aggression factor. Although the items in this factor are robust predictors of sexual and general recidivism, further research is required before we do not know how, or if, this factor should inform the identification of latent, psychologically meaningful propensities. The limited range of items available in the current study may have precluded an adequate characterization of the construct or constructs responsible for this empirically derived factor.

Toward a Construct-Level Approach in Risk Assessment

The current study supports the movement of sexual offender risk assessment practice from a focus on atheoretical risk markers to the assessment of psychologically meaningful constructs (Babchishin et al., 2012; Hanson, 2009; Mann et al., 2010). Construct-oriented risk assessment has many advantages. First, a construct-level approach offers insight into why certain scales predict certain outcomes (Parent, Guay, & Knight, 2011). If a scale contains mainly general criminality items (e.g., the Sex Offender Risk Appraisal Guide; Quinsey et al., 2006), it should be a better predictor of general and violent recidivism than sexual recidivism. Conversely, scales that contain mainly sexual criminality items, such as the Rapid Risk Assessment for Sex Offence Recidivism (RRASOR; Hanson, 1997), should predict sexual recidivism, but not general recidivism. If it is known that a scale contains items related to both sexual and general criminality (e.g., Static-99R), then it is possible to improve the prediction of nonsexual outcomes by removing the sexual criminality items (Babchishin, Hanson, & Blais, in press).

Second, construct-level approaches facilitate the integration of potentially conflicting results of multiple risk scales (Barbaree et al., 2006). For example, why would an offender get a very high score on the Sex Offender Risk Appraisal Guide, but an average score on the Static-99R? By understanding the constructs assessed by the measures, an evaluator could answer that the offender has high general criminality but relatively low sexual criminality.

Third, construct-level approaches maximize the clinical relevance of existing scales by facilitating the identification of the source of the risk. For example, knowing that an offender scored highly on the Static-2002R is not as useful as knowing that this offender scored highly on the persistence/paraphilia construct and low on general criminality. For this specific offender, anger management treatment programs may not be as advisable as self-regulation treatment programs focused on paraphilic interests and sexualized coping.

Understanding the constructs implicit in risk prediction tools also has the potential of improving predictive accuracy by improving the assessment of risk-relevant propensities. When the constructs are known, it is possible to improve the reliability and validity of their assessment using standard psychometric methods. For example, the assessment of general criminality could be improved by considering associated features, such as procriminal attitudes and negative peer associations. Similarly, risk prediction measures could be improved by including items related to risk-relevant propensities that have been previously neglected or underweighted in the original measure. The way forward for forensic risk assessment involves aggregating items into constructs, and then identifying empirical weights that maximize the relationship between the constructs and the outcome of interest.

Finally, as the above example has shown, latent variable models enable static risk factors to become indicators of potentially changeable constructs. Although the items found in persistence/paraphilia are not modifiable through intervention, the latent psychological construct they represent potentially is. Consequently, an interesting avenue for risk scales could be to integrate both static and dynamic risk factors, and sort them by constructs. Such a scale would offer concrete, modifiable treatment targets, while using empirically proven static and dynamic risk factors. Measurement of change in the latent constructs, however, would still need to focus on changeable (i.e., dynamic) indicators.

Limitations

Most of the limitations of this article pertain to the observed variables that were analyzed. First, latent variable models, such as factor analysis, assume that highly correlated items are caused by a common underlying latent variable. However, as could be the case for the youthful stranger aggression factor, items can be highly correlated in the absence of any relevant clinical entity behind them (Ruscio, Haslam, & Ruscio, 2006). The same warning applies to the other factors; without detailed construct validity analyses, there is no guarantee that what was extracted was actually meaningful psychological constructs.

Second, our factor analysis used only the 13 nonredundant items from the Static-99R and Static 2002R. Additional markers from other actuarial scales could have led to the identification of new constructs, or to a better definition of the weakly identified ones (youthful stranger aggression). The absence of dynamic risk factors especially limited the comprehensiveness of our interpretations, as well as our coverage of the numerous risk-relevant propensities of sex offenders. Further studies on the matter should aim to have a larger and more varied item pool.

Conclusion

Our study examined whether it was possible to identify psychologically meaningful constructs from STATIC risk instruments. The answer was “somewhat.” With 13 static risk factors in the analysis, and limited construct validity analyses, inferring psychological mechanisms could not be done with absolute confidence. The persistence/paraphilia and general criminality factors had coherent interpretations based on item content and predictive validity patterns. The youthful stranger aggression construct, however, remains largely undefined.

Given the consistency of our current results with those of previous studies, our large sample size (including multiple, diverse samples), and methodology, we believe that additional factor analytic studies on this set of items are unlikely to make substantial contributions to knowledge. Instead, research should focus on disentangling the psychological and clinical meaning of these factors (e.g., Ennis, Buro, & Jung, 2014). Construct validity analyses are warranted,

especially those that go beyond predictive validity. For example, the general criminality factor could be linked to validated psychopathy tests such as the Psychopathy Checklist–Revised (Hare, 2003), and the persistence/paraphilia factor could be linked to measures of sexual deviance (e.g., phallometric test results) or sexual self-regulation (e.g., dynamic risk factors from the STABLE-2007; Hanson et al., 2007).

In conclusion, our results indicate that sexual violence risk is a multidimensional construct. Consequently, evaluators should be encouraged to consider the psychologically meaningful constructs responsible for recidivism risk. Although these constructs can be assessed by construct-centered scales, such as the Structured Risk Assessment–Forensic Version (Thornton & Knight, 2013) or the Violence Risk Scale–Sexual Offender Version (Olver, Wong, Nicholaichuk, & Gordon, 2007), the current study suggests that the identification of these risk-relevant propensities can also be informed by simple items related to offence history and demographic characteristics of the offender.

Appendix

Summary of Item Preparation

Final variable	Resulting from:	Range
Age at release in years (reversed)	[100–age at release in years], replacing age at release (Static-99R/2002R)	15-82
Juvenile sex arrest	Any juvenile arrest for a sexual offence and convicted as an adult for a separate sexual offence (Static-2002R)	0-1
High rate of sexual offending/prior sex offences	The sum of prior sex offences (Static-99R), prior sentencing occasions for sexual offences (Static-2002R), and rate of sexual offending (Static-2002R)	0-7
Noncontact sex conviction	Any convictions for noncontact sex offences (Static-99R) and any sentencing occasion for noncontact sex offences (Static-2002R); identical items—counted once	0-1
Male victim	Any male victim (Static-99R/2002R); identical items—counted once	0-1
Two or more young victims, one unrelated	Young, unrelated victims (Static-2002R)	0-1
Breach of conditional release	Any community supervision violation (Static-2002R)	0-1
Few years free prior to index	Years free prior to index sex offence (Static-2002R)	0-1
Never lived with a lover for at least 2 years	Ever lived with (Static-99R)	0-1
Index nonsexual violence	Index nonsexual violence (Static-99R)	0-1
Unrelated/stranger victim	Merging any unrelated victim (Static-99R/2002R; counted once) and any stranger victim (Static-99R/2002R; counted once)	0-2
Prior sentencing	Merging any prior involvement with the criminal justice system (Static-2002R) and prior sentencing occasions for anything (Static-2002R), then summing it with prior sentencing dates (Static-99R)	0-4
Prior nonsexual violence	The sum of prior nonsexual violence (Static-99R) and any prior nonsexual violence sentencing occasion (Static-2002R)	0-2

Declaration of Conflicting Interests

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References

- Allen, B. P., & Pflugradt, D. M. (2014). An exploration of the latent constructs of the Static-99. *International Journal of Offender Therapy and Comparative Criminology*. Advance online publication. doi:10.1177/0306624X13496046
- Allison, P. D. (1984). *Event history analysis: Regression for longitudinal event data*. Beverly Hills, CA: Sage.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Andrews, D. A., & Bonta, J. (2010). *The psychology of criminal conduct* (5th ed.). New Providence, NJ: LexisNexis/Matthew Bender.
- Archer, R. P., Buffington-Vollum, J. K., Stredny, R. V., & Handel, R. W. (2006). A survey of psychological test use patterns among forensic psychologists. *Journal of Personality Assessment*, 87, 84-94. doi:10.1207/s15327752jpa8701_07
- Babchishin, K. M., Hanson, R. K., & Blais, J. (in press). More is less: Using Static-2002R subscales to predict violent and general recidivism among sexual offenders. *Sexual Abuse*.
- Babchishin, K. M., Hanson, R. K., & Helmus, L. (2012). Even highly correlated measures can add incrementally to predicting recidivism among sex offenders. *Assessment*, 19, 442-461. doi:10.1177/1073191112458312
- Barbaree, H. E., Langton, C. M., Blanchard, R., & Cantor, J. (2009). Aging versus stable enduring traits as explanatory constructs in sex offender recidivism: Partitioning actuarial prediction into conceptually meaningful components. *Criminal Justice and Behavior*, 36, 443-465. doi:10.1177/0093854809332283
- Barbaree, H. E., Langton, C. M., & Peacock, E. J. (2006). The factor structure of static actuarial items: Its relation to prediction. *Sexual Abuse*, 18, 207-226. doi:10.11194-006-9011-6
- Bard, L. A., Carter, D. L., Cerce, D. D., Knight, R. A., Rosenberg, R., & Schneider, B. (1987). A descriptive study of rapists and child molesters: Developmental, clinical, and criminal characteristics. *Behavioral Sciences & the Law*, 5, 203-220. doi:10.1002/bsl.2370050211
- Barrick, M. R., & Mount, M. K. (1991). The big five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, 44, 1-26. doi:10.1111/j.1744-6570.1991.tb00688.x
- Beech, A. R., & Ward, T. (2004). The integration of etiology and risk in sexual offenders: A theoretical framework. *Aggression and Violent Behavior*, 10, 31-63. doi:10.1016/j.avb.2003.08.002
- Bengtson, S. (2008). Is newer better? A cross-validation of the Static-2002 and the Risk Matrix 2000 in a Danish sample of sexual offenders. *Psychology, Crime & Law*, 14, 85-106. doi:10.1080/10683160701483104
- Bigras, J. (2007). *La prédiction de la récidive chez les délinquants sexuels* [Prediction of recidivism among sex offenders]. Available from ProQuest Dissertations & Theses database. (UMI No. NR30941)
- Boer, A. (2003). *Evaluating the Static-99 and Static-2002 risk scales using Canadian sexual offenders* (Unpublished master's thesis). University of Leicester, England.
- Boughner, K. L. (2010). Dimensions of the Static-2002: A statistical and theoretical perspective (Master's thesis). Available from ProQuest Dissertations & Theses database. (UMI No. 3404472)
- Brouillette-Alarie, S., Hanson, R. K., Babchishin, K. M., & Benbouriche, M. (2014). De la prédiction à la compréhension: recension des dimensions psychologiques de la Statique-99 [From prediction to understanding: A literature review of the psychological dimensions of the Static-99]. *Pratiques Psychologiques*, 20, 1-19. doi:10.1016/j.prps.2013.12.001
- Brouillette-Alarie, S., & Proulx, J. (2013). Predictive validity of the Static-99R and its dimensions. *Journal of Sexual Aggression*, 19, 311-328. doi:10.1080/13552600.2012.747630
- Brown, M. B., & Benedetti, J. K. (1977). On the mean and variance of the tetrachoric correlation coefficient. *Psychometrika*, 42, 347-355. doi:10.1007/BF02293655
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. New York, NY: Guilford Press.
- Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, 1, 245-276. doi:10.1207/s15327906mbr0102_10
- Cattell, R. B., & Kline, P. (1977). *The scientific analysis of personality and motivation*. New York, NY: Academic Books.
- Cleckley, H. (1941). *The mask of sanity*. St. Louis, MO: Mosby.
- Connor-Smith, J. K., & Flachsbart, C. (2007). Relations between personality and coping: A meta-analysis. *Journal of Personality and Social Psychology*, 93, 1080-1107. doi:10.1037/0022-3514.93.6.1080
- Cortoni, F., & Marshall, W. L. (2001). Sex as a coping strategy and its relationship to juvenile sexual history and intimacy in sexual offenders. *Sexual Abuse*, 13, 27-43. doi:10.1177/107906320101300104
- Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*, 10(7), 1-9. Retrieved from <http://pareonline.net/pdf/v10n7.pdf>
- Dawes, R. M., Faust, D., & Meehl, P. E. (1989). Clinical versus actuarial judgment. *Science*, 243, 1668-1674. doi:10.1126/science.2648573
- Doren, D. M. (2004). Toward a multidimensional model for sexual recidivism risk. *Journal of Interpersonal Violence*, 19, 835-856. doi:10.1177/0886260504266882
- Ennis, L., Buro, K., & Jung, S. (2014). Identifying male sexual offender subtypes using cluster analysis and the Static-2002R. *Sexual Abuse*. Advance online publication. doi:10.1177/1079063214527481
- Ennis, L., Hook, T., & Choy, A. (2011, November). *Reliability, validity, and factor structure of the Static-2002*. Paper presented at the

- 30th annual research and treatment conference of the Association for the Treatment of Sexual Abusers, Ontario, Toronto, Canada.
- Fisher, B. S., Daigle, L. E., Cullen, F. T., & Turner, M. G. (2003). Reporting sexual victimization to the police and others results from a national-level study of college women. *Criminal Justice and Behavior, 30*, 6-38. doi:10.1177/0093854802239161
- Flora, D. B., & Curran, P. J. (2004). An empirical evaluation of alternative methods of estimation for confirmatory factor analysis with ordinal data. *Psychological Methods, 9*, 466-491. doi:10.1037/1082-989X.9.4.466
- Flora, D. B., LaBrish, C., & Chalmers, R. P. (2012). Old and new ideas for data screening and assumption testing for exploratory and confirmatory factor analysis. *Frontiers in Psychology, 3*(55), 1-21. doi:10.3389/fpsyg.2012.00055
- Gardner, W., Lidz, C. W., Mulvey, E. P., & Shaw, E. C. (1996). Clinical versus actuarial predictions of violence in patients with mental illnesses. *Journal of Consulting and Clinical Psychology, 64*, 602-609. doi:10.1037/0022-006X.64.3.602
- Grove, W. M., Zald, D. H., Lebow, B. S., Snitz, B. E., & Nelson, C. (2000). Clinical versus mechanical prediction: A meta-analysis. *Psychological Assessment, 12*, 19-30. doi:10.1037/1040-3590.12.1.19
- Haag, A. M. (2005). Recidivism data from 198 offenders detained until their warrant expiry date. In *Do psychological interventions impact on actuarial measures: An analysis of the predictive validity of the Static-99 and Static-2002 on a re-conviction measure of sexual recidivism*. Available from ProQuest Dissertations & Theses database. (UMI No. NR05662). Unpublished raw data.
- Hanson, R. K. (1997, April). *The development of a brief actuarial risk scale for sexual offense recidivism* (User Report 97-04). Ottawa, Ontario, Canada: Department of the Solicitor General of Canada.
- Hanson, R. K. (2002). Recidivism and age: Follow-up data from 4,673 sexual offenders. *Journal of Interpersonal Violence, 17*, 1046-1062. doi:10.1177/088626002236659
- Hanson, R. K. (2009). The psychological assessment of risk for crime and violence. *Canadian Psychology/Psychologie canadienne, 20*, 172-182. doi:10.1037/a0015726
- Hanson, R. K., Babchishin, K. M., Helmus, L., & Thornton, D. (2013). Quantifying the relative risk of sex offenders: Risk ratios for Static-99R. *Sexual Abuse, 25*, 482-515. doi:10.1177/1079063212469060
- Hanson, R. K., & Bussière, M. T. (1998). Predicting relapse: A meta-analysis of sexual offender recidivism. *Journal of Consulting and Clinical Psychology, 66*, 348-362. doi:10.1037/0022-006X.66.2.348
- Hanson, R. K., Harris, A. J. R., Helmus, L., & Thornton, D. (2014). High risk sex offenders may not be high risk forever. *Journal of Interpersonal Violence, 29*, 2792-2813. doi:10.1177/0886260514526062
- Hanson, R. K., Harris, A. J. R., Scott, T., & Helmus, L. (2007, May). *Assessing the risk of sexual offenders on community supervision: The dynamic supervision project* (Corrections Research User Report No. 2007-05). Ottawa, Ontario, Canada: Public Safety Canada.
- Hanson, R. K., Helmus, L., & Thornton, D. (2010). Predicting recidivism among sexual offenders: A multi-site study of Static-2002. *Law and Human Behavior, 34*, 198-211. doi:10.1007/s10979-009-9180-1
- 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*, 1154-1163. doi:10.1037/0022-006X.73.6.1154
- Hanson, R. K., & Morton-Bourgon, K. E. (2009). The accuracy of recidivism risk assessments for sexual offenders: A meta-analysis of 119 prediction studies. *Psychological Assessment, 21*, 1-21. doi:10.1037/a0014421
- Hanson, R. K., Scott, H., & Steffy, R. A. (1995). A comparison of child molesters and non-sexual criminals: Risk predictors and long-term recidivism. *Journal of Research in Crime and Delinquency, 32*, 325-337. doi:10.1177/002242789503-2003004
- Hanson, R. K., & Thornton, D. (2000). Improving risk assessment for sexual offenders: A comparison of three actuarial scales. *Law and Human Behavior, 24*, 119-136. doi:10.1023/A:1005482921333
- Hanson, R. K., & Thornton, D. (2003, March). *Notes on the development of Static-2002* (Corrections Research User Report No. 2003-01). Ottawa, Ontario, Canada: Department of the Solicitor General of Canada.
- Hare, R. D. (2003). *Manual for the revised psychopathy checklist* (2nd ed.). Toronto, Ontario, Canada: Multi-Health Systems.
- Harkins, L., & Beech, A. R. (2007). *Examining the effectiveness of sexual offender treatment using risk band analysis*. Unpublished manuscript.
- Harrell, F. E., Jr., Califf, R. M., Pryor, D. B., Lee, K. L., & Rosati, R. A. (1982). Evaluating the yield of medical tests. *Journal of the American Medical Association, 247*, 2543-2546. doi:10.1001/jama.1982.03320430047030
- Harris, A. J. R., Phenix, A., Hanson, R. K., & Thornton, D. (2003). *Static-99 coding rules: Revised 2003*. Ottawa, Ontario: Solicitor General Canada. Retrieved from http://www.static99.org/pdfdocs/static-99-coding-rules_e.pdf
- Helmus, L. (2009). *Re-norming Static-99 recidivism estimates: Exploring base rate variability across sex offender samples* (Master's thesis). Available from ProQuest Dissertations & Theses database. (UMI No. MR58443).
- Helmus, L., Thornton, D., Hanson, R. K., & Babchishin, R. K. (2012). Improving the predictive accuracy of Static-99 and Static-2002 with older sex offenders: Revised age weights. *Sexual Abuse, 24*, 64-101. doi:10.1177/1079063211409951
- Helmus, L.-M., & Thornton, D. (in press). Stability, predictive, and incremental accuracy of the individual items of Static-99R and Static-2002R in predicting sexual recidivism: A meta-analysis. *Criminal Justice and Behavior*.
- Henson, R. K., & Roberts, J. K. (2006). Use of exploratory factor analysis in published research. *Educational and Psychological Measurement, 66*, 393-416. doi:10.1177/0013-164405282485
- Holgado-Tello, F. P., Chacón-Moscoso, S., Barbero-García, I., & Vila-Abad, E. (2010). Polychoric versus Pearson correlations in exploratory and confirmatory factor analysis of ordinal variables. *Quality & Quantity, 44*, 153-166. doi:10.1007/s11135-008-9190-y
- Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30*, 179-185. doi:10.1007/BF02289447

- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1-55. doi:10.1080/1070519909540118
- Jackson, R. L., & Hess, D. T. (2007). Evaluation for civil commitment of sex offenders: A survey of experts. *Sexual Abuse*, *19*, 425-448. doi:10.1177/107906320701900407
- Janka, C., Gallasch-Nemitz, F., & Dahle, K. P. (2011). Zur altersabhängigkeit von risikofaktoren bei sexualdelinquenz [The effect of age on risk factors among sexual offenders]. *Forensische Psychiatrie, Psychologie, Kriminologie*, *5*, 37-44. doi:10.1007/s11757-010-0087-y
- Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, *20*, 141-151. doi:10.1177/001316446002000116
- Knight, R. A., & Thornton, D. (2007, March). *Evaluating and improving risk assessment schemes for sexual recidivism: A long-term follow-up of convicted sexual offenders* (Document No. 217618). Retrieved from <https://www.ncjrs.gov/pdffiles1/nij/grants/217618.pdf>
- Knol, D. L., & Berger, M. P. F. (1991). Empirical comparison between factor analysis and multidimensional item response models. *Multivariate Behavioral Research*, *26*, 457-477. doi:10.1207/s15327906mbr2603_5
- Kubinger, K. D. (2003). On artificial results due to using factor analysis for dichotomous variables. *Psychology Science*, *45*, 106-110.
- Långström, N., & Hanson, R. K. (2006). High rates of sexual behavior in the general population: Correlates and predictors. *Archives of Sexual Behavior*, *35*, 37-52. doi:10.1007/s10508-006-8993-y
- Langton, C. M., Barbaree, H. E., Hansen, K. T., Harkins, L., & Peacock, E. J. (2007). Reliability and validity of the Static-2002 among adult sexual offenders with reference to treatment status. *Criminal Justice and Behavior*, *34*, 616-640. doi:10.1177/0093854806296851
- Lehmann, R. J. B., Goodwill, A. M., Gallasch-Nemitz, F., Biedermann, J., & Dahle, K. P. (2013). Applying crime scene analysis to the prediction of sexual recidivism in stranger rapes. *Law and Human Behavior*, *37*, 241-254. doi:10.1037/lhb0000015
- Lehmann, R. J. B., Goodwill, A. M., Hanson, R. K., & Dahle, K. P. (2014). Crime scene behaviors indicate risk relevant propensities of child molesters. *Criminal Justice and Behavior*. Advance online publication. doi:10.1177/0093854814521807
- Lehmann, R. J. B., Goodwill, A. M., Hanson, R. K., & Dahle, K. P. (in press). Acquaintance rape: Applying crime scene analysis to the prediction of sexual recidivism. *Sexual Abuse*.
- Lehmann, R. J. B., Hanson, R. K., Babchishin, K. M., Gallasch-Nemitz, F., Biedermann, J., & Dahle, K.-P. (2013). Interpreting multiple risk scales for sex offenders: Evidence for averaging. *Psychological Assessment*, *25*, 1019-1024. doi:10.1037/a0033098
- Lord, F. M., & Novick, R. M. (1968). *Statistical theories of mental test scores*. Reading, MA: Addison-Wesley.
- Mann, R. E., Hanson, R. K., & Thornton, D. (2010). Assessing risk for sexual recidivism: Some proposals on the nature of psychologically meaningful risk factors. *Sexual Abuse*, *22*, 191-217. doi:10.1177/1079063210366039
- McGrath, R., Cumming, G., Burchard, B., Zeoli, S., & Ellerby, L. (2010). *Current practices and emerging trends in sexual abuser management: The Safer Society 2009 North American Survey*. Brandon, VT: Safer Society Press.
- Meehl, P. E. (1954). *Clinical versus statistical prediction: A theoretical analysis and a review of the evidence*. Minneapolis: University of Minnesota.
- Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, *100*, 674-701. doi:10.1037/0033-295X.100.4.674
- Mossman, D. (1994). Assessing predictions of violence: Being accurate about accuracy. *Journal of Consulting and Clinical Psychology*, *62*, 783-792. doi:10.1037/0022-006X.62.4.783
- Muthén, L. K., & Muthén, B. O. (2010). *Mplus user's guide*. Los Angeles, CA: Author.
- O'Connor, B. P. (2000). SPSS and SAS and programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instruments, & Computers*, *32*, 396-402. doi:10.3758/BF03200807
- Olver, M. E., Beggs Christofferson, S. M., Grace, R. C., & Wong, S. C. P. (2013). Incorporating change information into sexual offender risk assessments using the Violence Risk Scale-Sexual Offender Version. *Sexual Abuse*. Advance online publication. doi:10.1177/1079063213502679
- Olver, M. E., Wong, S. C. P., Nicholaichuk, T., & Gordon, A. (2007). The validity and reliability of the Violence Risk Scale-Sexual Offender Version: Assessing sex offender risk and evaluating therapeutic change. *Psychological Assessment*, *19*, 318-329. doi:10.1037/1040-3590.19.3.318
- Parent, G., Guay, J. P., & Knight, R. A. (2011). An assessment of long-term risk of recidivism by adult sex offenders: One size doesn't fit all. *Criminal Justice and Behavior*, *38*, 188-209. doi:10.1177/0093854810388238
- Parry, C. D. H., & McArdle, J. J. (1991). An applied comparison of methods for least-squares factor analysis of dichotomous variables. *Applied Psychological Measurement*, *15*, 35-46. doi:10.1177/014662169101500105
- Patrick, C. J., Fowles, D. C., & Krueger, R. F. (2009). Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology*, *21*, 913-938. doi:10.1017/S095457940-9000492
- Pham, T. H., & Ducro, C. (2008). Évaluation du risque de récidive en Belgique francophone : Données préliminaires d'analyse factorielle de la « Sex Offender Recidivism Appraisal Guide » (SORAG) et de la Statique-99 [Risk assessment in social defence: Preliminary factorial analysis of the SORAG « Sex Offender Recidivism Appraisal Guide » (SORAG) and the Static-99]. *Annales Médico-Psychologiques*, *166*, 575-579. doi:10.1016/j.amp.2008.06.001
- Quinsey, V. L., Harris, G. T., Rice, M. E., & Cormier, C. A. (2006). *Violent offenders: Appraising and managing risk* (2nd ed.). Washington, DC: American Psychological Association.
- Rice, M. E., Harris, G. T., & Lang, C. (2013). Validation of and revision to the VRAG and SORAG: The Violence Risk Appraisal Guide-Revised (VRAG-R). *Psychological Assessment*, *25*, 951-965. doi:10.1037/a0032878

- Roberts, C. F., Doren, D. M., & Thornton, D. (2002). Dimensions associated with assessments of sex offender recidivism risk. *Criminal Justice and Behavior, 29*, 569-589. doi:10.1177/009385402236733
- Ruscio, J., Haslam, N., & Ruscio, A. M. (2006). *Introduction to the taxometric method: A practical guide*. Mahwah, NJ: Lawrence Erlbaum.
- Schmitt, T. A. (2011). Current methodological considerations in exploratory and confirmatory factor analysis. *Journal of Psychoeducational Assessment, 29*, 304-321. doi:10.1177/0734282911406653
- Seto, M. C. (2005). Is more better? Combining actuarial risk scales to predict recidivism among adult sex offenders. *Psychological Assessment, 17*, 156-167. doi:10.1037/1040-3590.17.2.156
- Seto, M. C., & Lalumière, M. L. (2001). A brief screening scale to identify pedophilic interests among child molesters. *Sexual Abuse, 13*, 15-25. doi:10.1177/107906320101300103
- Stevens, J. P. (1992). *Applied multivariate statistics for the social sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.
- Swets, J. A., Dawes, R. M., & Monahan, J. (2000). Psychological science can improve diagnostic decisions. *Psychological Science in the Public Interest, 1*, 1-26. doi:10.1111/1529-1006.001
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson.
- Therneau, T. M. (2011). A package for survival analysis in S (R package version 2.36-10) [Software]. Retrieved from <http://cran.r-project.org/web/packages/survival/index.html>
- Thornton, D., & Knight, R. A. (2013). Construction and validation of SRA-FV need assessment. *Sexual Abuse*. Advance online publication. doi:10.1177/1079063213511120
- Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika, 38*, 1-10. doi:10.1007/BF02291170
- Velicer, W. F. (1976). Determining the number of components from the matrix of partial correlations. *Psychometrika, 41*, 321-327. doi:10.1007/BF02293557
- Walters, G. D., Deming, A., & Elliott, W. N. (2009). Assessing criminal thinking in male sex offenders with the psychological inventory of criminal thinking styles. *Criminal Justice and Behavior, 36*, 1025-1036. doi:10.1177/009385-4809342200
- Yessine, A. K., & Bonta, J. (2008, January). *Pathways to serious offending*. Ottawa, Ontario, Canada: Public Safety Canada.