

Effect of the Stable-2007 on the Probability of Sexual Recidivism Risk as Determined by the Static-99R: A Closer Inspection of Data from Helmus and Hanson (2013)¹

By. Brian R. Abbott, Ph.D.
September 16, 2016

On July 31, 2016, I issued a brief report of research findings that I conducted based on data I received from Jan Looman, Ph.D. regarding the application of the Static-99R and Stable-2007 in a sample of 350 sexual offenders treated at a prison in Canada. The analysis revealed that the Stable-2007 achieved incremental predictive validity (“IPV”) beyond that established by the Static-99R alone. In other words, it appeared the Stable-2007 explained more sources of sexual recidivism risk than the Static-99R alone. As stated in the July 31, 2016 report, I obtained frequency data from Dr. Looman to analyze whether the observed IPV translated to producing sexual recidivism rates greater than that determined by the Static-99R alone. The results of the analysis revealed that the probability of sexual recidivism determined by the Static-99R did not change to a statistically significant extent after considering the incremental contribution of the Stable-2007 in explaining sources of sexual recidivism. The reader is referred to my July 31, 2016 report for more details.

Helmus and Hanson (2013) report that the DSP data-set consists of 566 sexual offenders who had combined Static-99R and Stable 2007 scores. The correlation between the Static-99R and Stable-2007 was .45 (Hanson, Helmus, & Harris, 2015).² The sexual offenders were under community supervision in Canada and the United States (Iowa and Alaska). See Helmus and Hanson (2013) for more details regarding the sample composition. The raters were community supervision officers. For the purpose of data analysis, the researchers reported results for all raters and for a subgroup of the community supervision officers, who provided all information requested of them when completing the measures, referred to as “conscientious raters.”

The IPV analysis conducted by Helmus and Hanson (2013) was accomplished through cox regression analysis (also known as survival analysis) because this statistical procedure permits analysis when time a risk is unequal for members of the sample. The outcome for cox regression analysis is the hazard ratio (“HR”). After controlling for the contribution of the Static-99R in explaining sources of any sexual recidivism,³ the Stable-2007 was found to account for additional sources of any sexual recidivism in both rater conditions- all raters (HR = 1.075; p = .003) and conscientious raters (HR = 1.134; p = .001).

Having established IPV, the next question is whether this effect produces a statistically significant increase in the probability of sexual recidivism than what was determined by the Static-99R alone. To address this research question, I contacted Dr. Hanson who graciously provided the frequency data to allow me to compute the sexual recidivism rate for the Static-99R alone and the sexual recidivism rate based on the combined effects of the Static-99R and Stable-2007 (known as priority levels). I then conducted the Fisher’s Exact Test to determine if the probability of sexual

¹ Helmus, L. & Hanson, R.K. (2013). *Stable-2007: Updated recidivism rates (Includes combinations with Static-99R, Static-2002R, and Risk Matrix-2000)*. Unpublished paper. Available from author: brian@dr-abbott.net.

² Hanson, R.K., Helmus, L.M., & Harris, A.J.R. (2015). Assessing the risk and needs of supervised sexual offenders: A prospective study using the Stable-2007, Static-99R, and Static-2002R. *Criminal Justice and Behavior*, 42(12), 1205-1224. doi:10.1177/0093854815602094

³ The recidivism information includes any offense considered as sexually motivated, including category B offenses as defined by the Static-99R coding rules and any violations of community supervision that resulted in an official sanction.

recidivism from the combined measures was significantly different than the probability of sexual recidivism observed by the Static-99R alone. I set the level of significance at $p = .05$. The results of the analyses are contained in Tables 1-4. Tables 1 and 2 report the data for all raters at the 3-year and 5-year follow ups, respectively, and Tables 3 and 4 report the information for conscientious raters at the 3-year and 5-year follow ups, respectively.

The priority category represents the risk level for the combination of the Static-99R risk category (low, moderate-low, moderate-high, and high) and the Stable-2007 risk category (low, moderate, and high). The priority categories consist of five levels, including low, moderate-low, moderate-high, high, and very high. For instance, offenders who are assigned Static-99R total scores corresponding to the low score category (≤ 1) and who receive Stable-2007 total scores within the high score category (≥ 12) fall into the moderate-low priority category. As observed in Table 1-4, the sexual recidivism rates associated with each priority category at each Static-99R score category are not significantly different than the recidivism rate at the applicable Static-99R score level, as the p-values are all above the cut-off for significance. In other words, the additional dynamic risk needs accounted for by the Stable-2007 total scores do not increase the probability of sexual recidivism risk beyond that determined at the Static-99R score category.

The lack of increase in the probability of sexual recidivism after considering the incremental contribution of the Stable-2007 over the Static-99R may be a result of one or more factors. One, the base rate of sexual recidivism for the sample was relatively low (at 3-years and at 5-years). The low base rate may have prevented the detection of an effect of IPV on increasing the probability for sexual recidivism. Second, the Stable-2007 accounts for an insufficient amount of additional explained variance to produce a practical increase in the proportion of recidivists detected by the Static-99R. Finally, the IPV achieved between the two instruments may have achieved statistical significance due to the accounting of shared variance (i.e., detecting redundant sources of risk) rather than Stable -2007 representing a contribution of unique sources of risk. These are empirical questions that warrant further investigation.

The results of this analysis of sexual offenders under community supervision are consistent with the data I reported in my July 31, 2016 paper where the combination of the Static-99R and Stable-2007 did not increase the detection of sexual recidivists captured by the Static-99R alone in a group of incarcerated sexual offenders. The same results from two different samples of sexual offenders provides strong empirical support that evaluators lack the foundation to conclude that the probability for sexual recidivism is greater than what the actuarial instrument reports when IPV has been established using a combination of static and dynamic risk factors.

All Raters

Table 1: Static-99R and Stable 2007 3-Year Follow Up

Static-99R Bin & Associated Total Scores	R+/N	Recidivism Rate	Stable-2007 Score Groups ⁴	Priority Category	R+/N	Recidivism Rate	p
Low Score ≤ 1	8/205	3.9%	Low & moderate	Low	7/188	3.7%	1.0
			High	Mod-Low	1/17	5.9%	.52
Moderate-low 2, 3	10/188	5.3%	Low	Low	0/47	0.0%	.22
			Moderate	Mod-low	7/106	6.6%	.79
			High	Mod-high	3/35	8.6%	.44
Moderate-High 4, 5	16/113	14.2%	Low	Mod-low	1/7	14.2%	1.0
			Moderate	Mod-high	8/67	11.9%	.82
			High	High	7/39	17.9%	.62
High ≥ 6	17/60	28.3%	Low & moderate	High	7/27	25.9%	1.0
			High	Very High	10/33	30.3%	1.0

Table 2: Static-99R and Stable 2007 5 Year Follow Up

Static-99R Bin & Associated Total Scores	R+/N	Recidivism Rate	Stable-2007 Score Groups	Priority Category	R+/N	Recidivism Rate	p
Low Score ≤ 1	12/182	6.6%	Low & moderate	Low	11/165	6.6%	1.0
			High	Mod-Low	1/17	5.9%	1.0
Moderate-low 2, 3	10/171	5.8%	Low	Low	0/38	0.0%	.22
			Moderate	Mod-low	7/99	7.1%	.79
			High	Mod-high	3/34	8.8%	.47
Moderate-High 4, 5	17/102	16.7%	Low	Mod-low	1/5	20.0%	1.0
			Moderate	Mod-high	8/60	13.3%	.82
			High	High	8/37	21.6%	.63
High ≥ 6	21/58	36.2%	Low & moderate	High	8/25	32.0%	1.0
			High	Very High	13/33	36.4%	.84

⁴ The following are the Stable-2007 score ranges associated with each categorical level: Low (0-3), Moderate (4-11), and High (≥ 12).

Conscientious Scorers

Table 3: Static-99R and Stable 2007 3-Year Follow Up

Static-99R Bin & Associated Total Scores	R ⁺ /N	Recidivism Rate	Stable-2007 Score Groups	Priority Category	R ⁺ /N	Recidivism Rate	p
Low Score ≤ 1	3/122	2.5%	Low & moderate	Low	2/114	1.8%	1.0
			High	Mod-Low	1/8	12.5%	.24
Moderate-low 2, 3	4/98	4.1%	Low	Low	0/25	0.0%	.58
			Moderate	Mod-low	3/59	5.1%	1.0
			High	Mod-high	1/14	7.1%	.50
Moderate-High 4, 5	8/58	13.8%	Low	Mod-low	0/3	0.0%	1.0
			Moderate	Mod-high	4/35	11.4%	1.0
			High	High	4/20	20.0%	.73
High ≥ 6	11/37	29.7%	Low & moderate	High	4/19	21.1%	.76
			High	Very High	7/18	38.9%	.77

Table 4: Static-99R and Stable 2007 5 Year Follow Up

Static-99R Bin & Associated Total Scores	R ⁺ /N	Recidivism Rate	Stable-2007 Score Groups	Priority Category	R ⁺ /N	Recidivism Rate	p
Low Score ≤ 1	4/108	3.7%	Low & moderate	Low	3/100	3.0%	1.0
			High	Mod-Low	1/8	12.5%	.33
Moderate-low 2, 3	4/88	4.5%	Low	Low	0/21	0.0%	1.0
			Moderate	Mod-low	3/54	5.6%	1.0
			High	Mod-high	1/13	7.7%	.51
Moderate-High 4, 5	11/55	20.0%	Low	Mod-low	0/3	0.0%	1.0
			Moderate	Mod-high	6/32	18.8%	1.0
			High	High	5/20	25.0%	.76
High ≥ 6	13/36	36.1%	Low & moderate	High	5/18	27.8%	.77
			High	Very High	8/18	44.4%	.79

**Effect of the Stable-2007 on the Probability of Sexual Recidivism Risk as Determined by the Static-99R:
A Closer Inspection of Data from Looman and Goldstein (2015)**

**By. Brian R. Abbott, Ph.D.
July 31, 2016**

In my practice with SVP cases, I regularly review reports from government evaluators who apply the clinically adjusted actuarial approach (“CAAA”) when assessing sexual recidivism risk. A major premise of the CAAA is that the addition of risk factors presumed to be external to an actuarial measure produces incremental predictive validity (“IPV”) and, when IPV has been established, the evaluators conclude it also increases the probability of sexual recidivism beyond that determined by the actuarial measure. Studies using the Stable-2007 (Hanson et al., 2015; Looman & Goldstein, 2015; Eher et al., 2012) SRA-FV (Thornton & Knight, 2013), and SOTIPS (McGrath et al., 2012) have established IPV when the instruments have been considered beyond the Static-99R. It is important to note that little research has been conducted as to IPV outside of the three measures referenced. Some evaluators will select certain risk factors from studies, which they believe increase sexual recidivism potential as applied to the individual and claim, without scientific validation, these factors are external to the Static-99R. The evaluators further claim this method achieves IPV and increases the probability of sexual recidivism beyond that determined by the Static-99R. This approach lacks research and any claims of IPV or increased probability of sexual recidivism are simply speculative.

IPV is a statistical concept that quantifies the extent to which the data from a second instrument explains additional sources of sexual recidivism risk beyond what was accounted for by the first instrument that was administered such as the Static-99R. A finding of statistically significant IPV means that the two measures together explain more sources of sexual recidivism risk than the Static-99R alone. It cannot be assumed that IPV translates into a higher probability of sexual recidivism that what is observed at the Static-99R score assigned to the individual. The probability of sexual recidivism based on the results of both measures must be computed separately from the statistic that establishes IPV.¹ This paper briefly explores this issue using a data set of sexual offenders presented by Looman and Goldstein at the 2015 ATSA annual conference.

I contacted Dr. Looman to provide frequency data that would allow me to compute the sexual recidivism rate for the Static-99R alone and the sexual recidivism rate based on the combined effects of the Static-99R and Stable-2007. I then conducted the Fisher’s Exact Test to determine if the probability of sexual recidivism from the combined measures was significantly different than the probability of sexual recidivism reported the Static-99R alone. I set the level of significance at $p = .05$.

The sexual offenders in the sample consist of 350 individuals assessed and/or treated in the Ontario Region of the Correctional Service of Canada. The average follow-up time was 6.1 (sd = 2.9) years (range = 6 days to 12.9) years. Using cox regression, Looman and Goldstein found that the Static-99R was a significant predictor of sexual recidivism (Exp. = 1.20; Wald = 8.16; $p = .004$). When adding the effect of the Stable-2007 in combination with the Static-99R, the researchers found that additional variance (i.e., sources of sexual recidivism risk) was explained beyond that determined by the Static-99R alone (Exp = 1.11; Wald = 6.85; $p = .009$). The question remains, however: Does

¹ Typically, IPV is tested using logistic regression or cox regression.

statistically significant IPV produce sexual recidivism rates greater than observed at each Static-99R risk bin? The data in the table below examines this issue.

Static-99R Bin & Associated Total Scores	N (Risk Estimate)	N	Stable-2007 Score Groups	Priority Category	Risk Estimate	Number of Recidivists	N
Low Score \leq 1	4 (2.4%)	165	Low & moderate	Low	2.5%	4	163
			High	Mod-Low	0.0%	0	2
Moderate-low 2, 3	3 (4.6%)	65	Low	Low	0.0%	0	10
			Moderate	Mod-low	4.7%	2	43
			High	Mod-high	8.3%	1	12
Moderate-High 4, 5	1 (1.7%)	60	Low	Mod-low	0.0%	0	36
			Moderate	Mod-high	4.3%	1	23
			High	High	0.0%	0	1
High \geq 6	7 (11.7%)	60	Low & moderate	High	0.0%	0	26
			High	Very High	20.6%	7	34

The observed sexual recidivism rate at a three-year fixed period is reported in the left most panel of the table for each of the four Static-99R risk bins (low, moderate-low, moderate-high, and high). The column headed “Stable-2007 Score Groups” describes the Stable-2007 score groups to which the offenders were assigned based on their Stable-2007 total scores.² The column entitled “Priority Category” refers to the revised risk category based on the combination of the total scores from the Static-99R and Stable-2007 (Fernandez, Harris, Hanson, & Sparks, 2014, October). For example, there are 165 sexual offenders in the Static-99R low score category. These individuals were assigned Stable-2007 scores within the low, moderate, and high Stable-2007 score categories. Based on the combined Static-99R and Stable-2007 scores, 163 sexual offenders were assigned to the low priority category and 2 were placed in the moderate-low priority category. The number of recidivists and total number of offenders for each priority level were used to calculate the observed sexual recidivism rate. The same method was used for each Static-99R risk bin. This analytic strategy directly assesses the effect of the Stable-2007 on the sexual recidivism rate only among the offenders comprising each Static-99R risk bin.

The data in last three columns of the table pertain to each priority category associated with the Static-99R risk bin. After computing the risk estimates for each priority category, I then tested the differences between each Static-99R risk bin sexual recidivism estimate and the corresponding priority category sexual recidivism risk estimate using the Fisher’s Exact Test. None of the comparison achieved statistical significance, which means that the consideration of the Stable-2007 did not produce meaningful differences in the sexual recidivism rates

² The following specifies the Stable-2007 total scores associated with each score category: Low (0-3), Moderate (4-11), High (\geq 12).

determined by the Static-99R alone. In other words, the probability of recommitting a sexual offense when considering the combination of the Static-99R and Stable-2007 was not meaningfully different than the observed Static-99R sexual recidivism rate alone.

The results from this analysis demonstrate that IPV had no statistically meaningful effect on the probability of sexual recidivism as determined by the Static-99R alone. The findings highlight the importance for government evaluators to provide scientific data to support claims that IPV found with the Stable-2007 or other variables considered beyond the Static-99R increases the probability of sexual recidivism beyond that determined by the actuarial measure.

The effects of aging on sex offender recidivism

Howard Barbaree, Ph.D., C.Psych.
Centre for Addiction and Mental Health
and the University of Toronto

Strong belief in sexual aggression persisting unabated into old age

- Meta-analysis of recidivism studies
 - Hanson & Bussiere (1998)
 - Median correlation recidivism with age = $-.09$
 - Reports of long-term recidivism (25 years +)
 - Hanson, Steffy & Gauthier (1993)
 - Prentky, Lee, Knight, & Cerce (1997)
 - Actuarial assessments of risk
 - RRASOR (Hanson, 1997)
 - Implication that risk does not change after age 25
 - Effective items focus on static risk
 - Current authoritative theoretical formulations
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Harris, Skilling & Rice (2001).

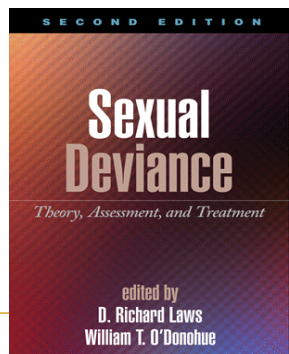
The construct of psychopathy. In M. Tonry & N. Morris (Eds.), *Crime and Justice: An annual review of research* (pp. 197-264). Chicago:University of Chicago Press.

- ...the preponderance of scientific evidence supports the idea that the majority of variance in violent criminal conduct (including sexual aggression) can be attributed to genetically and physiologically based enduring traits that, once initiated, exhibit life-long persistence under conditions so far observed.
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Biology, aging, and sexual behavior

Barbaree, H.E., & Blanchard, R. (2008) Sexual deviance over the lifespan: Reductions in deviant sexual behavior in the aging sex offender

Chapter 3



The role of testosterone in libido and sexual drive

- Studies of castration on sexual behavior
 - In humans, sub-human primates and other animals-castration leads to decline in sexual behavior over a period of weeks and months
 - In castrates, injections of testosterone lead to a return to sexual behavior

The likely role of testosterone in maintaining recidivism risk

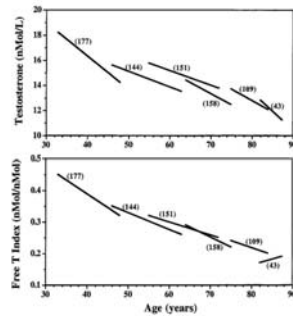
- European studies on the effects of castration as a treatment for sex offenders (Freund, 1980)
 - Outcome data indicate large decreases in recidivism among castrated sex offenders (from 50% to <10%)
- Medical treatments (anti-androgens, etc.) of sex offenders designed to reduce bio-available testosterone, thereby reducing recidivism risk

The effects of aging on sexual behavior in men

- Biological
 - Blood levels of the male sex hormone testosterone peak in the teens and decrease thereafter, for the remainder of the life-span

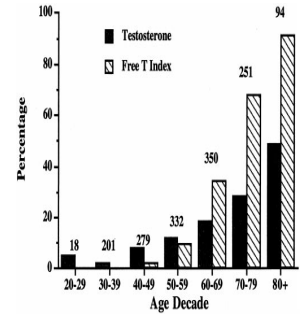
Blood levels of testosterone: Linear decreases with age

- Baltimore Longitudinal Study of Aging (Harman et al., 2001)
- Longitudinal and cross-sectional comparisons
- Recent meta-analysis of this literature has improved data quality



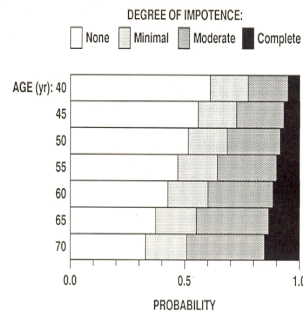
Hypo-gonadism is a natural outcome of aging

- Baltimore Longitudinal Study of Aging (Harman et al., 2001)
- Blood levels of testosterone < 300 ng/dL
- % of samples at different ages diagnosed with hypo-gonadism
- From age 40, % increases in linear fashion



Prevalence of erectile dysfunction increases with age

- Feldman et al. (1994)
- Prevalence of minimal erectile dysfunction constant at about 20% over all age groups
- Prevalence of moderate and complete dysfunction increases in linear fashion with age



The effects of aging on sexual behavior in men

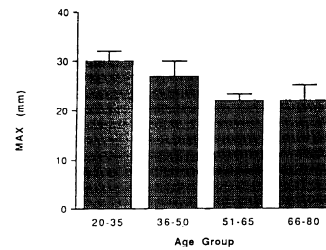
- Men (non-offenders) show reductions in sexual behaviour over the lifespan
 - Reduced sexual arousal, interest, fantasy
 - Lower frequency of erection, orgasm, intercourse, masturbation

Rowland, Greenleaf, Dorfman, & Davidson (1993). Aging and sexual function in men. *Archives of Sexual Behavior*, 22, 545-557.

- Recorded erectile responses to visual erotic stimulation
- N= 39 healthy, sexually functional men ranging in age from 21 to 82
- Results indicated significant age-related decreases in erectile response to erotica

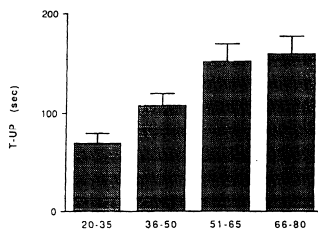
From Rowland et al. (1993)

Maximum Amplitude of Erection (MAX)



From Rowland et al. (1993)

Time to Maximum Amplitude (T-UP)



Rowland, Greenleaf, Dorfman, & Davidson (1993). Aging and sexual function in men. *Archives of Sexual Behavior*, 22, 545-557.

- Collected data on self-reported sexual activity and functioning
- N= 39 healthy, sexually functional men ranging in age from 21 to 82
- Results indicated significant age-related decreases in self-reported frequency of sexual activity

Andropause

- Male menopause, caused by declining levels of the hormone testosterone in aging men
- Experienced by men from 40 to 70
- Symptoms include:
 - Decreased libido, erections less strong, decreased quality of orgasm
 - Lack of energy
 - Decrease in endurance and strength
 - Dysphoria
- Testosterone Replacement Therapy (TRT)

Viagra, Levitra, Cialis, etc.

- Advertisements target middle-aged to older males and their partners
- Golf Digest
- The Golf Channel
- Is the amount of advertising proportional to the amount of use of these drugs?

The effects of aging on sexual behavior in sex offenders

- Sex offenders show reductions in sexual arousal with age

Hall (1992). Sexual arousal as a function of physiological and cognitive variables in a sexual offender population. *Archives of Sexual Behavior*, 20, 359-369.

- Examined the relationship between age and erectile response using circumferential penile plethysmography
- 169 inpatient adult male sex offenders ranging in age from 20 to 66 years of age
- Age accounted for a significant proportion of variance in arousal; Sexual arousability was inversely related to age

Kaemingk, Koselka, Becker, & Kaplan (1995). Age and adolescent sexual offender arousal. *Sexual Abuse: A Journal of Research and Treatment*, 7, 249-257.

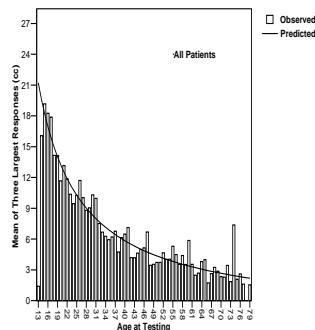
- Examined the relationship between age and erectile response using circumferential penile plethysmography
- 104 adolescent sex offenders ranging in age from 13 to 17 years of age
- Age accounted for a significant proportion of variance in arousal
- Younger adolescents had erectile responses to a greater number of assessment stimuli and greater mean percentage full erection scores across assessment stimuli

Blanchard, R. & Barbaree, H. (2005).

- The strength of sexual arousal as a function of the age of the sex offender: Comparisons among pedophiles, hebephiles, and teleiophiles. *Sexual Abuse: A Journal of Research and Treatment*, 17, 441-456.

Magnitude of erectile responses among sex offenders

- Blanchard & Barbaree (2005)
- Erectile responses measured using volumetric plethysmography
- Magnitude of erectile response decreases with age



Karacan, I., Salis, P.J., Thornby, J.I., & Williams, R.L. (1976). The ontogeny of nocturnal penile tumescence. *Waking and Sleeping*, 1, 27-44.

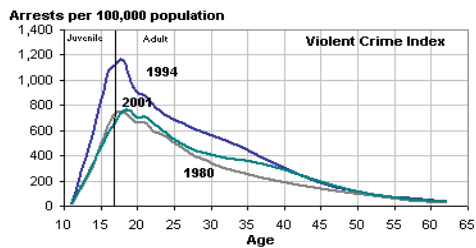
- Nocturnal penile tumescence often measured as part of the study of sleep
- Nocturnal erections associated with REM sleep
- The frequency, duration, and rigidity of NPT peaks around the age of 13, and thereafter slowly declines with age

Effects of aging on recidivism risk

There are good reasons to expect a reduction in recidivism in sex offenders as they age

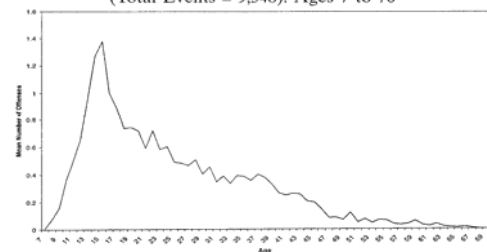
- For many years it has been recognized that the most robust cross-sectional finding in the field of criminology is that the prevalence and incidence of criminal behavior by adults goes steadily down with age (Moffitt, 1993; Wollert, 2006)
- In what is now a classic paper, Hirschi and Gottfredson (1983), reviewed many studies pointing up the “invariance” of this relationship. In particular, they documented a pattern showing crime rates decreased with age for offender groups who a) lived in different centuries, b) came from different countries, c) differed with respect to age and gender, d) were at large in the community or incarcerated; and e) committed different types of crimes (Wollert, 2006)

Cross-sectional data compiled by the Federal Bureau of Investigation in 1980, 1994, and 2001 (OJJDP, August 2004)



Sampson, R.J., & Laub, J.H. (2003). Life-course desisters? Trajectories of crime among delinquent boys followed to age 70. *Criminology*, 41, 301-339.

Figure 1. Actual Mean Number of Offenses for Total Crime (Total Events = 9,548): Ages 7 to 70



If recidivism in sexual offenders does not decrease with age:

- It would be the only index of sexual behavior in the human male that does not!

If recidivism in sexual offenders does not decrease with age:

- It would be the only criminal behavior in men that does not!

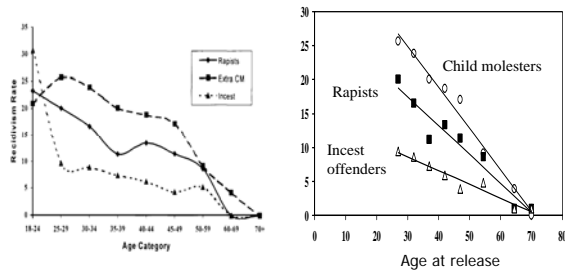
Age at release

The age variable that varies with aging

Hanson (2002)

- Recidivism and age: Follow-up data on 4,673 sexual offenders. *Journal of Interpersonal Violence*, 17, 1046-1062

Recidivism among sex offenders decreases with age (Hanson,2002)



Re-plot from Barbaree et al. (2003)

Barbaree, H. E., Blanchard, R., & Langton, C. M. (2003).

- The development of sexual aggression through the life span: The effect of age on sexual arousal and recidivism among sex offenders. In R.A. Prentky, E. S. Janus, & M. C. Seto (Eds.), *Sexually coercive behavior: Understanding and management* (pp. 59-71). New York: *Annals of the New York Academy of Sciences* (Vol. 989).

Barbaree, H. E., Blanchard, R., & Langton, C. M. (2003). The development of sexual aggression through the life span: The effect of age on sexual arousal and recidivism among sex offenders. In R.A. Prentky, E. S. Janus, & M. C. Seto (Eds.), *Sexually coercive behavior: Understanding and management* (pp. 59-71). New York: *Annals of the New York Academy of Sciences* (Vol. 989).

- Examined the effects of age-at-release on sexual recidivism
- N=477 sex offenders released to the community after treatment in the WSBC
 - 53% rapists (n=254)
 - 47% child molesters (n=223)

Barbaree, Blanchard & Langton (2003)
Continued

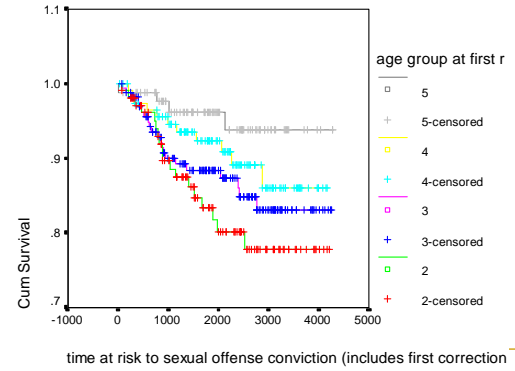
- Mean age at release 40 years (range 21 to 83 years)
- Recidivism Outcome
 - 39% were convicted of a criminal offense of any kind (Mean follow-up period for this outcome=1642 days or 4.5 years)
 - 25.6% were convicted of a serious (violent and/or sexual offense) (Mean follow-up period for this outcome = 1856.7 days or 5.1 years)
 - 11.3% were convicted of a sexual (contact) criminal offense (Mean follow-up period for this outcome =2016 days or 5.5 years)

Age-at-release cohorts

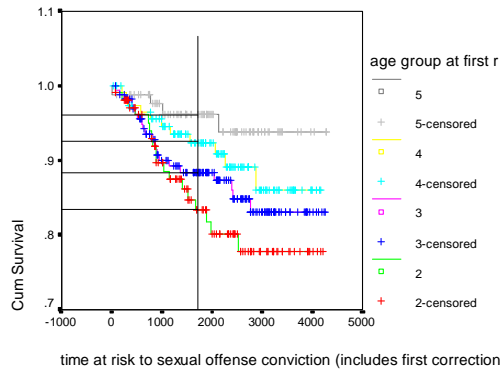
- Divide the total sample into those men who were released in their:

□ 20's	N= 107
□ 30's	N= 165
□ 40's	N= 117
□ Older than 50	N= 88
□ Total	N= 477

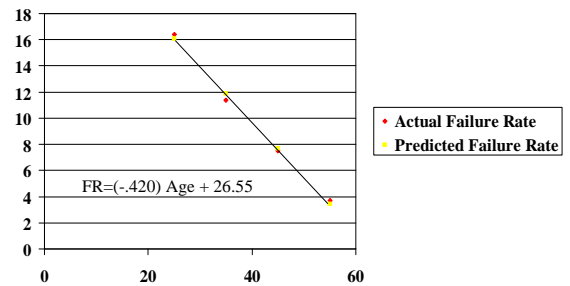
Survival Functions



Survival Functions



Five-year failure rate as a function of age-at-release



Obtained Regression Equations

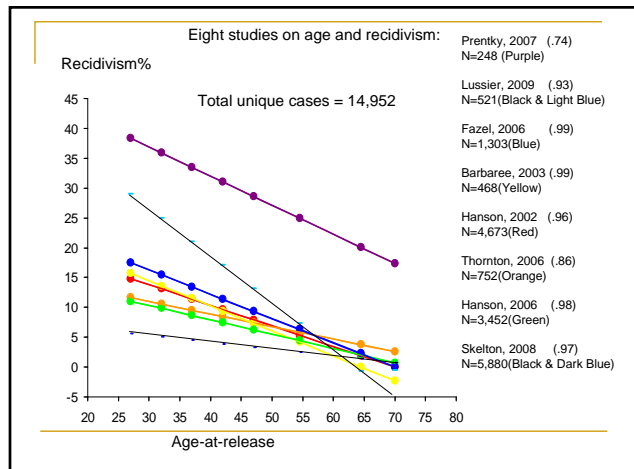
- From Hanson (2002)
 - $\text{Recidivism} = (-.429 * \text{Age}) + 29.99$
- From Barbaree et al. (2003)
 - $\text{Recidivism} = (-.420 * \text{Age}) + 26.55$

8 empirical studies on age and recidivism

- Hanson (2002)
- Barbaree, Blanchard, & Langton (2003)
- Fazel, Sjöstedt, Långström, & Grann (2006)
- Thornton (2006)
- Hanson (2006)
- Prentky & Lee (2007)
- Skelton & Vess (2008)
- Lussier & Healey (2009)
- Mixed offenders (child molesters, rapists and incest offenders combined)
- Reported recidivism rates for different age cohorts delineated by age-at-release class intervals (i.e., 25-29 years)
- Studies differed in:
 - Age class intervals
 - Length of follow-up period

Combining data from these studies on one graph

- Each of these studies reports recidivism rates for different age groupings over different lengths of follow-up
- For each study, I calculated a regression equation, then plotted regression line over period from age 25 to 70 correcting to a 5-year follow-up period



Summary to this point

- Like non-offenders, sex offenders show significant and sizeable reductions in sexual arousal over the lifespan, from puberty to old age
- It is likely that, like non-offenders, they experience concomitant age-related reductions in libido, sexual drive, interest, and fantasy
- Sex offenders released from custody at different ages show age-related decreases in risk for recidivism, independent of other risk factors
- From age 25, the best description of the reduction is a gradual linear decline

Introduction of new category of risk: Maturational

- Static risk variables are those characteristics of offenders related to risk that do not change with time
- Dynamic risk variables are those that do change over time
- Maturational variables are those that change with age
 - They change predictably and inexorably
 - They cannot be reversed

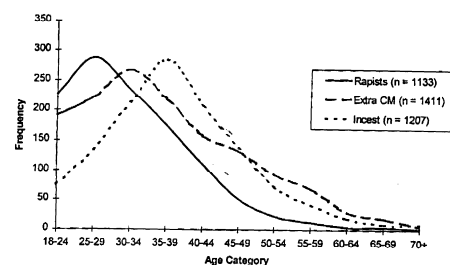
Aging of the civilly committed population

	Youngest	Oldest	Average Age	% over 60
Arizona	23	68	48	11
California	28	86	52	25
Florida	20	87	46	13
Illinois	22	77	44	9
Iowa	22	84	45	17
Kansas	21	92	43	14
Massachusetts	20	79	42	7
Minnesota	20	81	44	13
Missouri	23	83	49	30
Nebraska	25	50	38	0
New Jersey	24	72	47	13
North Dakota	22	68	36	8
Pennsylvania	21	23	21	0
South Carolina	18	72	43	14
Texas	30	77	39	9
Virginia	27	68	47	16
Washington	21	80	47	16
Wisconsin	18	102	45	14
Average	23	75	43	13

Source: New York Times March 3, 2007

From Hanson (2001)

Age Distribution of Sexual Offenders



Sample	N	Use in the RRASOR	Use in the Static-99	Used in Hirschi (2001)	Average Age of Sample
Millbrook, Ontario	191	Developmental	Validation	Yes	33.1
Canadian Federal 1983/84	316	Developmental	None	Yes	30.5
Institute Philippe Pirel	382	Developmental	Validation	Yes	36.2
Alberta Hospital Edmonton	363	Developmental	None	Yes	35.5
SOHP, California	1138	Developmental	None	Yes	37.6
Canadian Federal 1991/94	241	Developmental	None	Yes	36.8
Oakridge, Penang	288	Developmental	Validation	Yes	30.4
Partial HM Prison Service	303	Validation	None	No	34.3
HM Prison Service	531	None	Validation	Yes	36
Washington State SCSA	587	None	None	Yes	36

Use of actuarial assessment “as is” with older sex offenders is potentially discriminatory

- Professional standards guiding the use of psychological tests warn against the use of tests if such use may be discriminatory on the basis of age, race, culture, etc.
- If the person being tested is substantially different from the individuals who made up the standardization sample for the test, the test should be applied with extreme caution

Final Summary and Conclusions

- Profound impact on policy and law in regard to the management of sex offender risk
 - If risk is an enduring life-long feature of an offender, long term incarceration or incapacitation is the only answer for some high risk individuals
 - Public expenditure on long-term detention facilities may be justified
- But,
 - If risk reduces with age, risk management resources to protect public safety should be focussed on the younger offender
 - If risk reduces with age, older offenders who are detained in custody should be released as they age
 - Argues for increased resources for community treatment and follow-up

Not everyone agrees!

- Doren, D. (2006). What Do We Know About the Effect of Aging on Recidivism Risk for Sexual Offenders? *Sexual Abuse: A Journal of Research and Treatment*, 18, 137-157.
- Doren, D. (2008). Determining the effect offender age has on sexual recidivism risk. Paper presented at the 27th Annual Meeting of the Association for the Treatment of Sexual Abusers. Atlanta, Georgia. October 23, 2008

Examining the confound between aging and actuarial risk

Howard Barbaree, Ph.D.
University of Toronto and
Centre for Addiction and Mental Health

Paper presented at the Annual Meeting of the
Association for the Treatment of Sexual Abusers.
Dallas, TX. Sept 30-Oct 3, 2009.

Previously published papers on this issue

- Barbaree, H.E., Langton, C.M., & Blanchard, R. (2007). Predicting recidivism in sex offenders using the VRAG and SORAG: The contribution of age-at-release. *International Journal of Forensic Mental Health*, 6, 29-46.
- Barbaree, H.E., Langton, C.M., Blanchard, R., & Boer, D. (2008). Predicting recidivism in sex offenders using the SVR-20: The contribution of age at release. *International Journal of Forensic Mental Health*, 7, 47-64.

The relationship between age-at-release and item scores on all 38 static actuarial items (VRAG, SORAG, RRASOR, Static-99 & MnSOST-R)

- Barbaree, H.E., Langton, C.M., Blanchard, R., & Cantor, J.M. (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.

Current arguments against the aging effect in sex offender recidivism

- The confound between aging and actuarial risk explains away the aging effect
- Age at first criminal conviction is the more important age variable
- Plateau of recidivism risk in the middle years especially with child molesters
- High risk offenders do not show aging effect
- Different Hazard Ratios (.98 v .96)

Harris, G.T., & Rice, M.E. (2007) Adjusting actuarial violence risk assessments based on aging or the passage of time. *Criminal Justice and Behavior*, 34, 297-313.

- Offenders released at older ages are lower in actuarial risk (aging is confounded with actuarial risk)
- Therefore, actuarial risk explains the aging effect

Yes, there is a confound...

Actuarial	N	r with age
VRAG bin score	468	-.503**
SORAG bin score	468	-.362**
Static-99 score	468	-.225*
MnSOST-R actuarial category	354	-.208*
RRASOR	468	.056

**p < .001 *p < .05

How many actuarial items are correlated with age at release?

- Of the 36 unique (non-age) items contained in the VRAG, SORAG, Static-99, RRASOR & MnSOST-R...
- 31 have significant correlations with age at release
 - 20 significant negative correlations
 - 11 significant positive correlations
 - 5 non-significant correlations

These are some of the negative correlations between actuarial items and age at release

Actuarial	Item#	Item:	N	r
MnSOST-R	10	Adolescent antisocial behavior	407	-0.364**
MnSOST-R	12	Employment history	414	-0.358**
Static-99	7	Any stranger victims	462	-0.341**
VRAG/SORAG	6/9	Failure on conditional release	460	-0.294**
VRAG/SORAG	3/3	History of alcohol problem	468	-0.214**
Static-99/RRASOR	6	Any unrelated victims	465	-0.212**
VRAG/SORAG	12/14	PCL-R score	448	-0.206**
VRAG/SORAG	2/2	Elementary school maladjustment	447	-0.200**
MnSOST-R	3	Under supervision when they commit	407	-0.197**

** p < .001

These are some of the positive correlations between actuarial items and age at release

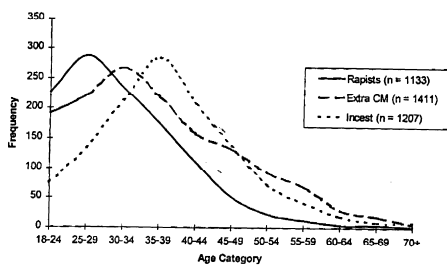
Actuarial	Item#	Item:	N	r
MnSOST-R	7	# of different age groups victimized	404	0.376**
MnSOST-R	1	# of sex/sex related convictions	414	0.334**
MnSOST-R	6	Multiple acts on single victim	405	0.254**
Static-99	8	Any male victims	465	0.217**
MnSOST-R	8	Offended against a 13-to15 year old	403	0.211**
Static-99	1	Prior sex offences	466	0.158*
MnSOST-R	2	Length of sex offending history	409	0.144*
SORAG	7	# of convicts for sexual offences prior	463	0.143*
SORAG	13	Deviant sexual preferences	393	0.118*

** p< .001 * p< .05

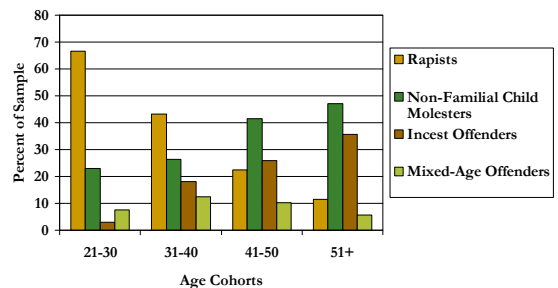
Why would actuarial items reflecting antisocial behavior and sexual deviance be differentially distributed over age?

- Antisocial behavior more prominent risk factor in rapists and rapists are younger than child molesters
- Sexual deviance more prominent risk factor in child molesters and child molesters are older than rapists

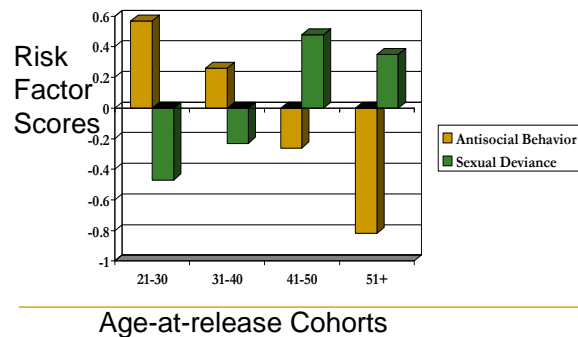
From Hanson (2001)
Age Distribution of Sexual Offenders



Relative proportion of sex offender sample (N=468) for each offender type at each age cohort



Distribution of risk factor scores across age-at-release cohorts



Harris, G.T., & Rice, M.E. (2007) Adjusting actuarial violence risk assessments based on aging or the passage of time. *Criminal Justice and Behavior*, 34, 297-313.

- Offenders released at older ages are lower in actuarial risk (aging is confounded with actuarial risk)
 - Actually, while older offenders are lower in *Antisocial Behavior*, they are higher in *Sexual Deviance*
- Therefore, actuarial risk explains the aging effect
 - Actually, aging can partially explain actuarial risk prediction...Here's how

Aging contributes to actuarial prediction

- Younger sex offenders are at higher risk for recidivism because of their age
- Antisocial traits are a characteristic of younger sex offenders
- The youthfulness of these offenders increases their risk over and above the level of risk owing to their antisocial traits alone

For example, the actuarial item, “failure on conditional release” appears in various forms in a number of actuarial instruments

- This item reflects a number of features of an offender’s behavior that would increase his risk for recidivism, including:
 - Impulsivity
 - non-responsiveness to supervision
 - rule breaking, etc.

For example, the actuarial item, “failure on conditional release” appears in various forms in a number of actuarial instruments

- Offenders who fail on conditional release are younger than offenders who succeed.
- If younger offenders are at higher risk for sexual recidivism because of the effects of age on recidivism, the age effect would facilitate this item’s ability to predict recidivism.

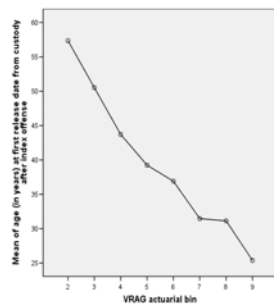
For all of these actuarial items, offenders for whom the item was endorsed were younger at release than offenders to whom the item did not apply

Actuarial	Item#	Item:	N	r
MnSOST-R	10	Adolescent antisocial behavior	407	-0.364**
MnSOST-R	12	Employment history	414	-0.358**
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MnSOST-R	3	Under supervision when they commit	407	-0.197**

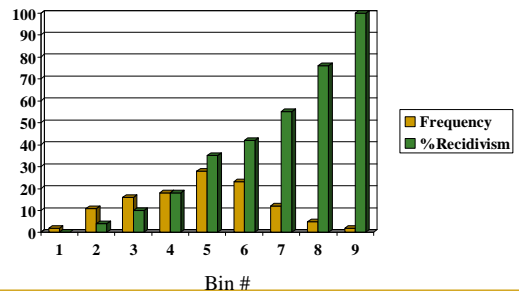
** p< .001

When an actuarial instrument is composed mostly of antisocial behavior items, such as the VRAG...

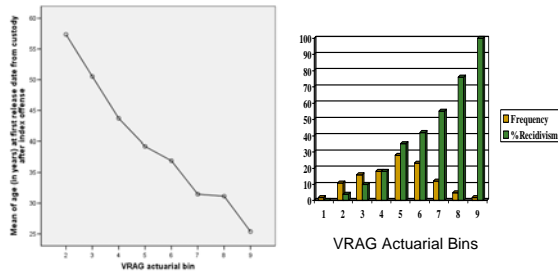
- Mean age-at-release decreases in a linear fashion from lowest actuarial bin (57 years) to highest (25 years)
- $F_{\text{linear}}(1,460) = 158.65, p < .001.$
- $F_{\text{deviation}}(6,460) = 1.30, ns.$



The Violence Risk Appraisal Guide (VRAG)



The VRAG exploits the confound between actuarial risk and age

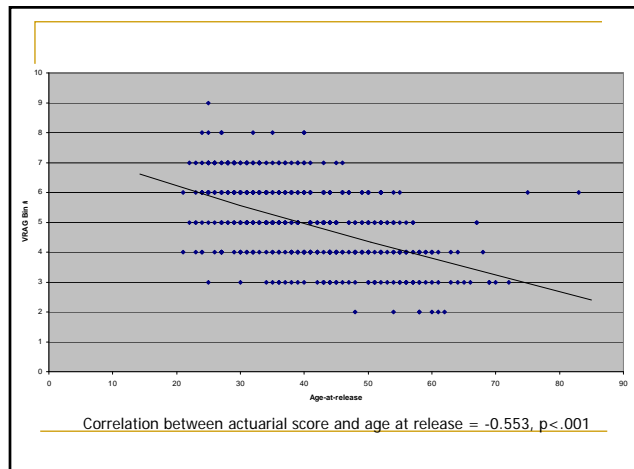


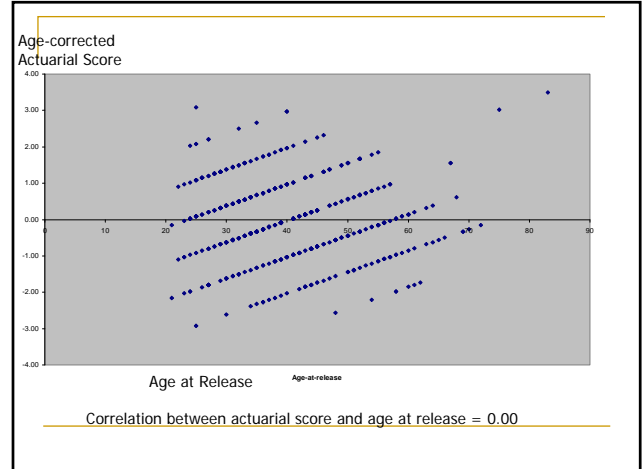
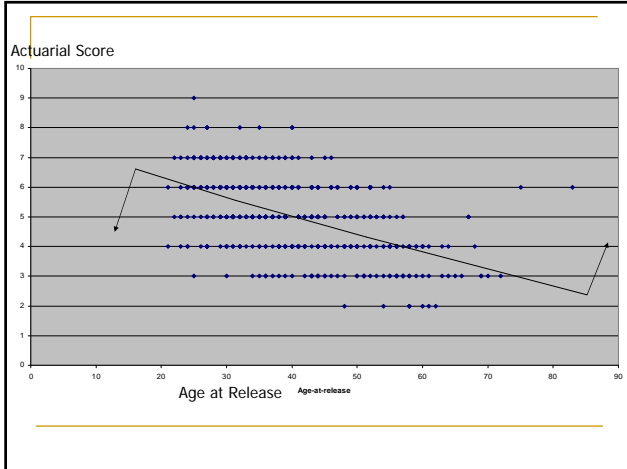
Second, aging impairs actuarial prediction

- Older sex offenders are at lower risk for recidivism because of their advanced age
- Traits of sexual deviance are relatively more prevalent in the older sex offender
- Their advanced age reduces their risk below that due to their level of sexual deviance alone

As a test of this hypothesis...

- We used semi-partial correlation to remove the effects of age-at-release from actuarial item scores
 - We regressed actuarial total scores and actuarial items scores on age-at-release and saved the residuals as "age-corrected" actuarial scores
- We compared the "age corrected" actuarial scores with their uncorrected counterparts in the ability to predict recidivism using ROC analysis





As predicted...

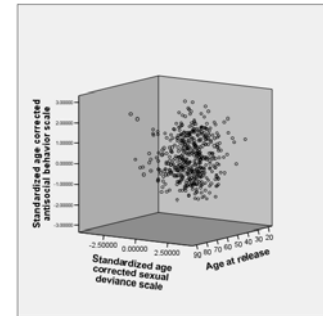
- For antisocial behavior items, removal of the effects of age-at-release significantly **decreased** AUCs in the prediction of recidivism
- For sexual deviance items, removal of the effects of age-at-release significantly **increased** AUCs in the prediction of recidivism

Our conclusion...

- The effects of aging on recidivism is embedded in actuarial scores
- In order to resolve the confound between aging and actuarial risk, age-corrected actuarial item scores are required
- The semi-partial correlation calculation has the effect of “age correcting” actuarial item scores

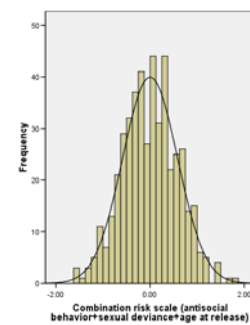
Using age-corrected actuarial item scores, we calculated three orthogonal standardized risk factor scores for each offender in our sample

- Antisocial Behavior Scale
- Sexual Deviance Scale
- Age Risk Scale (Standardized distribution of ages-at-release and multiplied by -1)



We constructed a single risk score for prediction of recidivism by combining the three risk factor scores

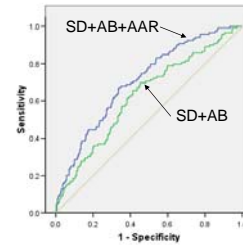
- Combination scale: the three standardized risk factor scores were summed and the resulting distribution of scores was standardized



Derived scales predicting sexual and violent recidivism: AUCs from ROC analysis

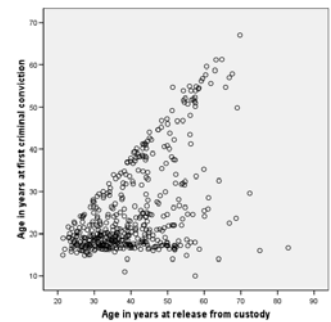
<u>Derived scales</u>	<u>Sexual Recidivism</u>	<u>Violent Recidivism</u>
Sexual Deviance Scale	.64**	.54
Antisocial Behavior Scale	.59	.64*
Age Risk Scale	.61*	.69***
Combination Scale	.71***	.72***

ROC curves for prediction of violent recidivism



Harris, G.T., & Rice, M.E. (2007) Adjusting actuarial violence risk assessments based on aging or the passage of time. *Criminal Justice and Behavior*, 34, 297-313.

- Age-at-release is not the important age variable, but rather age-at-first criminal conviction is the important age variable
- Once you enter age-at-first criminal conviction into the prediction equation, age-at-release does not enter as a powerful predictor
- Therefore, age-at-first criminal conviction explains the aging effect



Correlation = .577, $p < .001$

Derived scales predicting sexual and violent recidivism: Correlations with Age-at-first Criminal Conviction

<u>Age Corrected Risk Factor Scales</u>	<u>Pearson R</u>
Antisocial Behavior	-.40*
Sexual Deviance	-.04

*p< .01

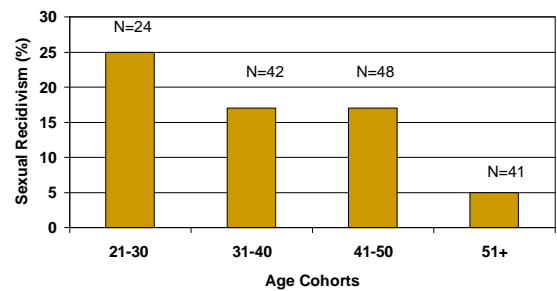
Craig, L.A. (2008) How should we understand the effect of age on sexual recidivism. *Journal of Sexual Aggression, 14, 185-198.*

- Studies with consistent results on the existence of a plateau effect on age (middle age bands) and sexual recidivism risk
 - Especially in samples with high proportion of child molesters
 - Craig (2007)
 - Fazel et al. (2006)
 - Hanson (2006)
 - Langan et al. (2003)
 - Thornton (2006)

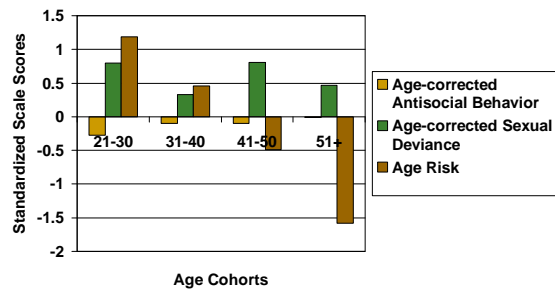
Craig, L.A. and Beach, A. (2009) Best practice in conducting actuarial risk assessments with adult sex offenders. *Journal of Sexual Aggression, 15, 193-211.*

- ...historical research indicates that risk generally decreases with age. However, this is true only for rapists, not child abusers.

Sexual Recidivism in Non-Familial Child Molesters (N=155) Over Age-at-release



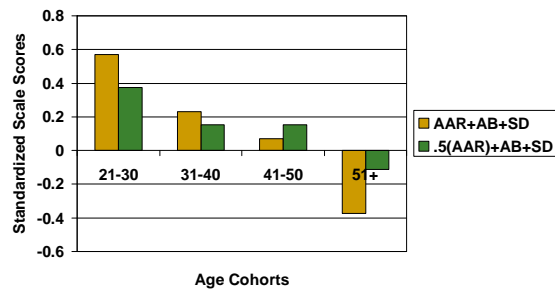
Risk Factor Scores over Age-at-release in Non-Familial Child Molesters



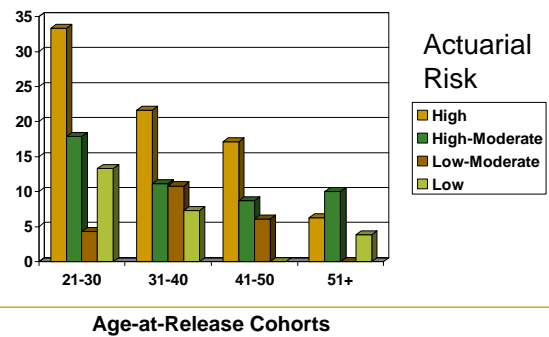
We calculated a combined risk score by combining the factor scores within each of the age cohorts

- Equal weighting of the three risk factors
 - Recidivism Risk = Age Risk + Antisocial Behavior + Sexual Deviance
- With Age Risk modeled as being less strong as a risk factor than Antisocial Behavior and Sexual Deviance
 - Recidivism Risk = .5(Age Risk) + Antisocial Behavior + Sexual Deviance

Combined Risk Factors



Sexual Recidivism (%) for age cohorts by levels of actuarial risk



Cox regression – For High Risk Offenders N=118

Sexual Recidivism					95% CI	
Variable	b	SE	Wald	e ^b	Lo	Hi
First Block (<i>Chi Square</i> =4.487, <i>df</i> =1, <i>p</i> <.05)						
Actuarial Risk	.970	.489	3.932*	2.64	1.01	6.88
Second Block (<i>Chi Square change</i> =4.906, <i>df</i> =1, <i>p</i> <.05)						
Age-at-release	-.049	.023	4.438*	.953	.911	.997

* p<.05

Cox regression – For All Offenders N=468

Sexual Recidivism					95% CI	
Variable	b	SE	Wald	e ^b	Lo	Hi
First Block (<i>Chi Square</i> =25.237, <i>df</i> =1, <i>p</i> <.001)						
Actuarial Risk	.936	.186	25.258**	2.549	1.770	3.671
Second Block (<i>Chi Square change</i> =8.756, <i>df</i> =1, <i>p</i> <.01)						
Age-at-release	-.041	.015	7.964*	.959	.932	.987

* p<.005 **p<.001

Hazard Ratio (.96 or .98)

- When you use traditional actuarial scores to control for recidivism risk, you will get a higher hazard Ratio (.98) for age at release indicating a lower (2%) reduction in risk per year
- But traditional actuarial instrument scores have age-at-release embedded in them so their entry in the first block in Cox regression uses up some of the aging effect

Hazard Ratio (.96 or .98)

- When you use age corrected actuarial scores to control for recidivism risk (or the RASORR which is not correlated with age at release), you get a lower hazard ratio (.96) for age at release indicating a higher 4% reduction in risk per year
- Therefore, the effect of aging is estimated at twice the magnitude when you use measures of risk as control variables that are not confounded with age at release

So what is an evaluator to do?

- Use the Static-99R
- Use an age-stratified actuarial table
- Make adjustments to an actuarial estimate derived through traditional means

Static-99R

- Helmus, L., Thornton, D., & Hanson, R.K. (2009, October). *Should Static-99 risk estimates be adjusted based on age-at-release? A multisite evaluation*. Paper presented at the 28th Annual Research and Treatment Conference of the Association for the Treatment of Sexual Abusers. October 2, 2009. Dallas, Texas.
- <http://www.static99.org/>

Age-stratified actuarial table

- Wollert, R., Cramer, E., Waggoner, J., Skelton, A., & Vess, J. (in press). Recent research (N= 9,305) underscores the importance of using age-stratified actuarial tables for sex offender risk assessment. *Sexual Abuse: A Journal of Research and Treatment*.

Make empirically guided adjustments to traditional actuarial estimates

- Prentky, R.A., Janus, E., Barbaree, H., Schwartz, B.K., & Kafka, M.P. (2006). Sexually violent predators in the courtroom: Science on trial. *Psychology, Public Policy and Law*, 12, 357-393.

Age	Hazard Rate	Hazard Rate
	0.96	0.98
40	0.48	0.48
41	0.46	0.47
42	0.44	0.46
43	0.42	0.45
44	0.41	0.44
45	0.39	0.43
46	0.38	0.43
47	0.36	0.42
48	0.35	0.41
49	0.33	0.40
50	0.32	0.39

Thank you

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