

# Evolution, Validity & Lessons from the ARMIDILO

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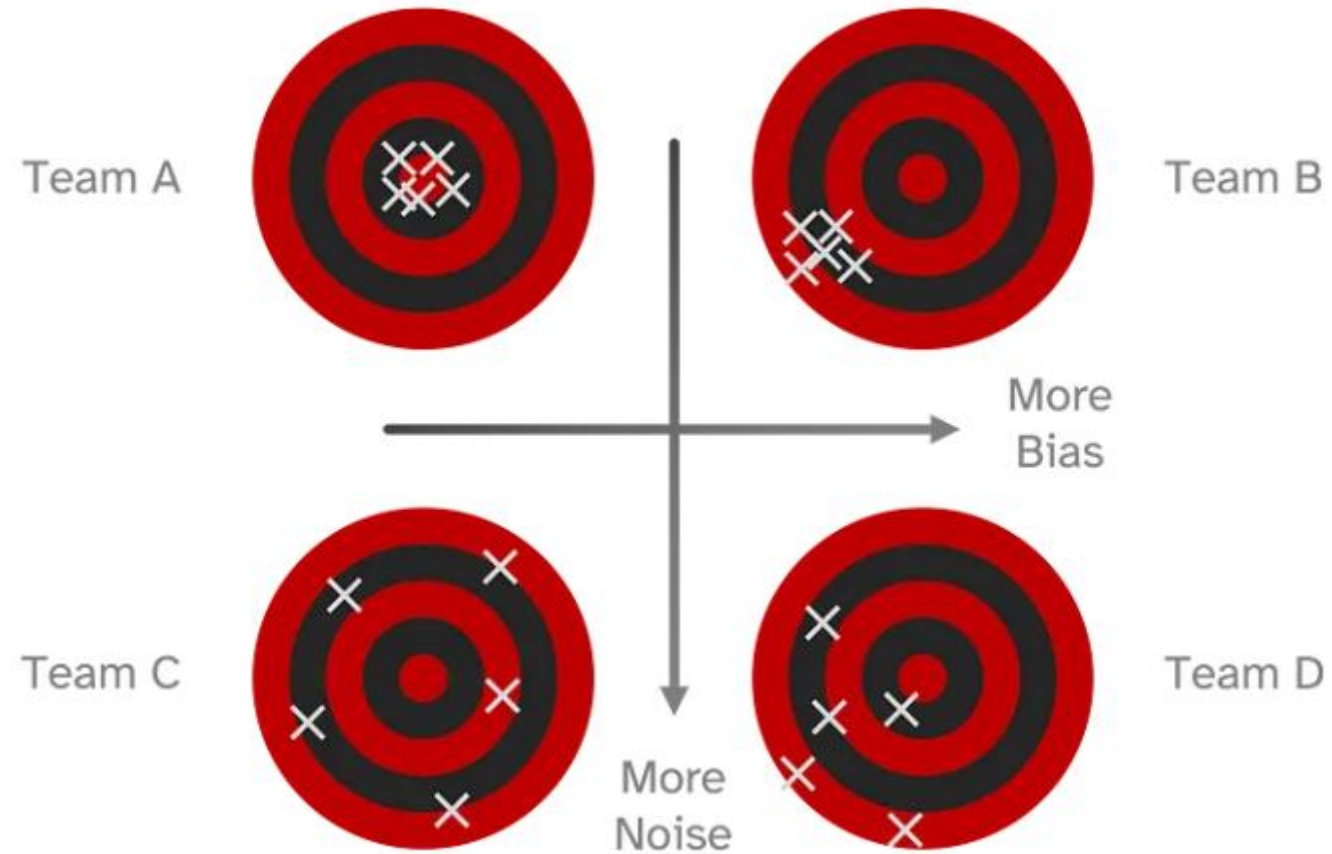
Families,  
Fairness  
and Housing

# Prof Douglas P. Boer

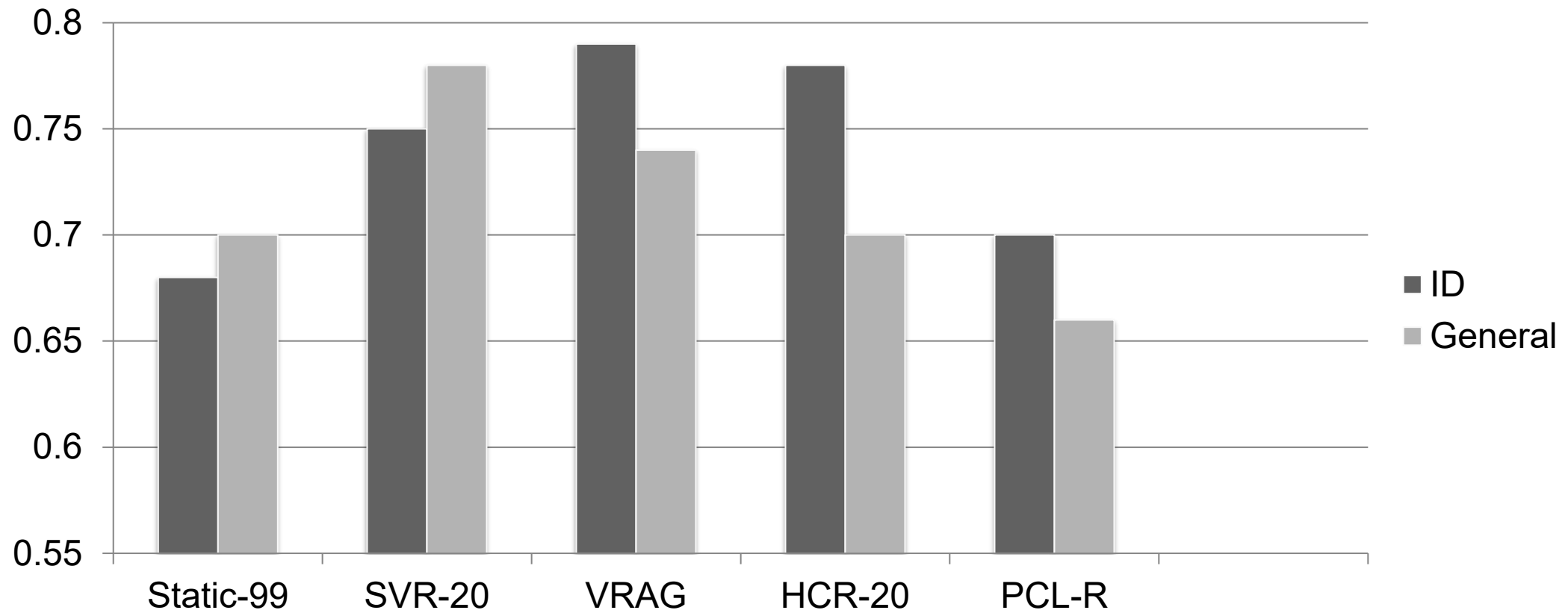


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# Noise versus bias



# ID versus general population predictive validity

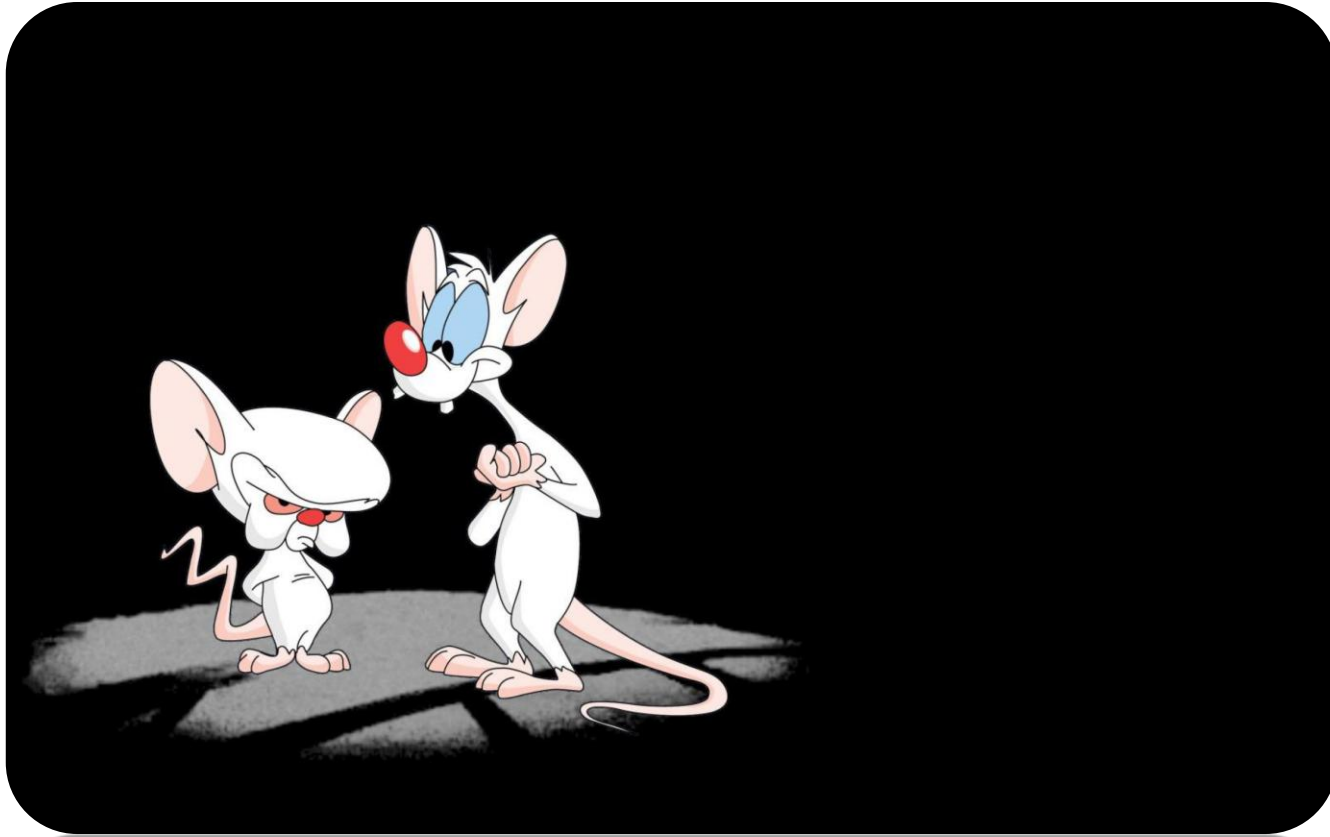


## SPJ v Actuarial assessment validity

***“Our study found no evidence that, compared with SCJ tools, actuarial instruments produced better levels of predictive validity. This finding suggests that clinicians and researchers could focus on identifying which measure, actuarial or not, produces the highest rate of predictive validity for their population and setting of interest. Additional considerations when choosing a risk measure may include the additional costs of training and materials, ease of use, and whether a tool is useful in making decisions regarding effective treatment and risk management.” (p. 510)***

Singh, J. P., Grann, M., & Fazel, S. (2011). A comparative study of violence risk assessment tools: A systematic review and meta regression analysis of 68 studies involving 25,980 participants. *Clinical psychology review*, 31(3), 499-513.

# Bias & disability?



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# Bias in disability?



ndis

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# Pathway to Prosecution

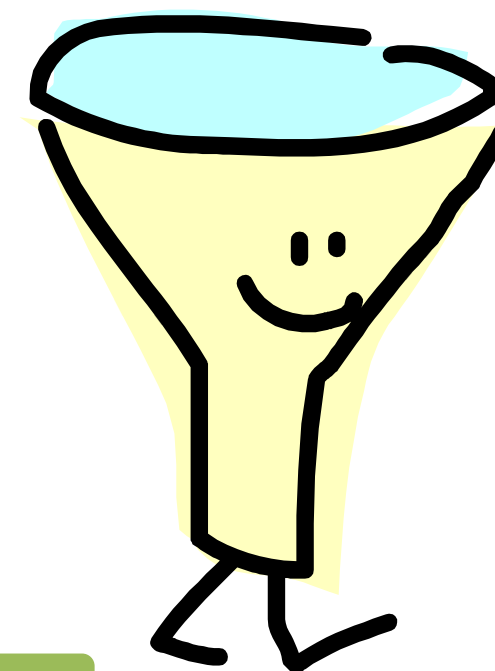
Higher rates of actual physical violence and problematic sexual behaviour (Taylor & Novaco, 2005; Lindsay, 2002)

Higher rates of ID in courts (Cockram, 2005; Hayes, 2009)

Higher number of court dates (Frize et al 2008)

Availability of diversionary options

Lower sentences but higher frequency





# Horses for courses

# ARMIDILO

- Assessment of Risk & Manageability of Individuals with Developmental and Intellectual Limitations who Offend
- Structured professional judgment
- Only dynamic variables
- Client and environmental items
- Risk and protective
- Acute & Stable (ARMIDILO-S)
- Versions:
  - General recidivism
  - Sexual



# ARMIDILO items

Client			
Risk & Protective Item	Tool	Risk & Protective Item	Rationale
Supervision Compliance	ARMIDILO-S/G	Mental Health	ARMIDILO-S/G
Treatment Compliance	ARMIDILO-S/G	Goals	ARMIDILO-G
Emotional Coping	ARMIDILO-S/G	Self Efficacy	ARMIDILO-G
Inappropriate Preoccupation	ARMIDILO-S/G	Education	ARMIDILO-G
Attitudes	ARMIDILO-S/G	Employment	ARMIDILO-G
Offence Management	ARMIDILO-S/G	Leisure	ARMIDILO-G
Relationships	ARMIDILO-S/G	Finance	ARMIDILO-G
Impulsivity	ARMIDILO-S/G	Behaviour	ARMIDILO-G
Substance Use	ARMIDILO-S/G		
Environment items			
Consistency of Supervision	ARMIDILO-S/G	Access to Victims / Means	ARMIDILO-S/G
Attitudes Towards the Client	ARMIDILO-S/G	Access to Substances	ARMIDILO-S/G
Staff Communication	ARMIDILO-S/G	Situational Stability	ARMIDILO-S/G
Client Knowledge	ARMIDILO-S/G	Access to Services	ARMIDILO-S
Relationships	ARMIDILO-S/G		

# Blacker, Beech, Wilcox, & Boer, 2011

Recidivism	Special needs group (n = 44)				Non-ID group (n = 44)				Total sample (n = 88)			
	Unofficial <sup>a</sup>	Sexual	Violent	General	Unofficial <sup>a</sup>	Sexual	Violent	General	Unofficial <sup>a</sup>	Sexual	Violent	General
RRASOR	0.52	0.54	0.70	0.65	0.63	0.60	0.55	0.50	0.57	0.57	0.65	0.58
RM2000/V	0.48	0.50	0.57	0.82	0.45	0.56	0.71	0.83	0.49	0.53	0.63	0.82
SVR-20												
Psychosocial Adjustment	0.42	0.50	0.81	0.53	0.70	0.72	0.48	0.65	0.57	0.60	0.73	0.59
Sexual Offences	0.42	0.37	0.55	0.46	0.62	0.66	0.63	0.45	0.55	0.54	0.62	0.47
Future plans	0.55	0.50	0.77	0.59	0.44	0.47	0.63	0.56	0.51	0.48	0.73	0.59
Overall score	0.40	0.45	0.80	0.50	0.70	0.73	0.55	0.60	0.58	0.59	0.74	0.56
ARMIDILO-Stable	0.56	0.61	0.83	0.62	0.64	0.63	0.62	0.57	0.62	0.61	0.79	0.61
ARMIDILO-Acute	0.76	0.73	0.76	0.59	0.48	0.40	0.52	0.50	0.66	0.57	0.72	0.56

*Note:* <sup>a</sup> Includes unofficial sexual recidivism data and reconviction data.

AUC, area under the curve. All AUC of the ROC calculations were performed using an open-ended, total follow-up time frame. A five-year follow-up period was used. The special needs group consists of offenders assessed as borderline, those with intellectual disabilities and those without a formal IQ assessment.

# Blacker, Beech, Wilcox, & Boer, 2011

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RM2000/V	0.48	0.50	0.57	0.82	0.45	0.56	0.71	0.83	0.49	0.53	0.63	0.82
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Sexual Offences	0.42	0.37	0.55	0.46	0.62	0.66	0.63	0.45	0.55	0.54	0.62	0.47
Future plans	0.55	0.50	0.77	0.59	0.44	0.47	0.63	0.56	0.51	0.48	0.73	0.59
Overall score	0.40	0.45	0.80	0.50	0.70	0.73	0.55	0.60	0.58	0.59	0.74	0.56
ARMIDILO-Stable	0.56	0.61	0.83	0.62	0.64	0.63	0.62	0.57	0.62	0.61	0.79	0.61
ARMIDILO-Acute	0.76	0.73	0.76	0.59	0.48	0.40	0.52	0.50	0.66	0.57	0.72	0.56

*Note:* <sup>a</sup> Includes unofficial sexual recidivism data and reconviction data.

AUC, area under the curve. All AUC of the ROC calculations were performed using an open-ended, total follow-up time frame. A five-year follow-up period was used. The special needs group consists of offenders assessed as borderline, those with intellectual disabilities and those without a formal IQ assessment.

# Blacker, Beech, Wilcox, & Boer, 2011

Scales	ID (IQ < 75) group ( <i>n</i> = 10)		
	AUC	SE	95% CI
RRASOR	0.47	0.24	-0.00 to 0.94
RM2000/V	0.63	0.21	0.21-1.04
SVR-20			
Psychosocial Adjustment	0.88	0.12	0.65-1.1
Sexual Offences	0.41	0.24	-0.06 to 0.87
Future Plans	0.66	0.19	0.28-1.03
Overall Score	0.75	0.15	0.45-1.05
ARMIDILO-Stable	0.86	0.13	0.62-1.13
ARMIDILO-Acute	0.75	0.15	0.45-1.05

*Note:* Based on sexual reconviction data. AUC, Area under the curve. All AUC of the ROC calculations were performed using an open-ended, total follow-up time frame. A five-year follow-up period was used. The ID group consists of only 10 participants.

# Lofthouse, Lindsay, Totsika, Hastings, Boer, & Haaven, 2013

Tool	AUC
ARMIDILO-S environ	.81
ARMIDILO-S client	.90
ARMIDILO-S	.92
VRAG	.75
Static-99	.58

# Frize et al 2015

N: 111

Age: 32.67

Male: 92.1%

IQ: Mode = Mild (50.36%)

Aboriginal: 36.7%

CALD: 5.8%

Guardianship:  
45.3%

AoD History:  
89.3%

Mental  
disorder:  
64.8%

# Reliability of the ARMIDILO-G

ARMIDILO-G Sub-Domain	Item Homogeneity MIC	Internal Consistency Cronbach $\alpha$	Inter-Rater Reliability	
			ICC <sub>1</sub> (95% CI)	ICC <sub>2</sub> (95% CI)
Total Risk	.30	.92	-	-
Client Risk	.34	.90	.45 (.29 - .66)	.93 (.87 - .97)
Environment Risk	.30	.79	.50 (.29 - .80)	.94 (.87 - .98)
Total Protective	.31	.92	-	-
Client Protective	.35	.90	.53 (.36 - .73)	.95 (.90 - .98)
Environment Protective	.30	.79	.57 (.35 - .84)	.96 (.90 - .99)

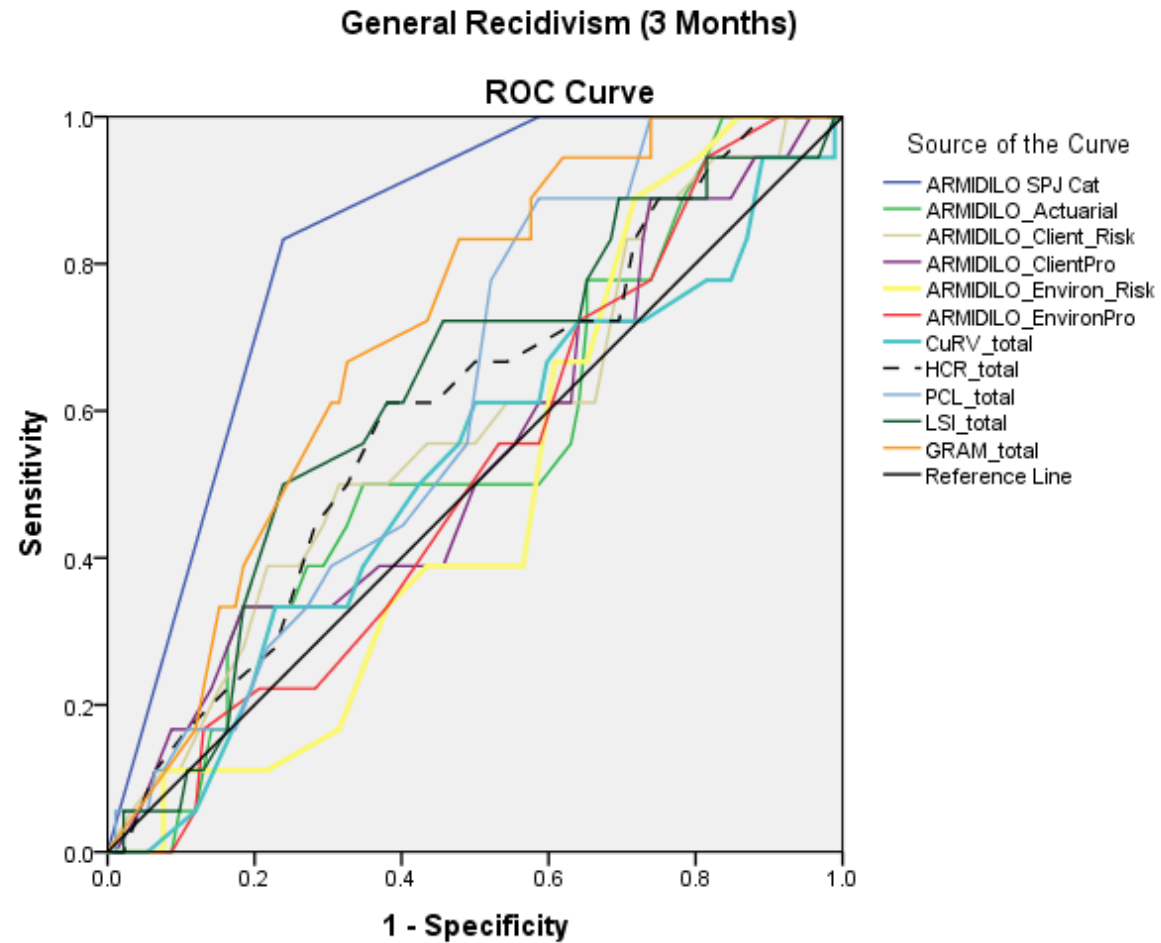
*Note.* MIC = Mean Inter-item Correlation. For MIC and Cronbach  $\alpha$   $N = 137$ . ICC = Intraclass Correlation Coefficient. For ICC  $N = 16$ . All ICC are significant at  $p \leq .001$ .

# Correlations between tools

Measure	ARMIDILO-G						CuRV	HCR-20	PCL-R	LSI-R	GRAM
	Total SPJ	Total Act.	Client Risk	Client Protect.	Envir. Risk	Envir. Protect.					
ARMIDILO-G SPJ	-										
ARMIDILO-G Act	.63	-									
Client Risk	.67	.92	-								
Client Protective	-.62	-.93	-.82	-							
Envir. Risk	.46	.82	.68	-.61	-						
Envir. Protective	-.46	-.81	-.54	.69	-.77	-					
CuRV	.58	.81	.85	-.69	.65	-.56	-				
HCR-20	.63	.79	.63	-.63	.47	-.40	.61	-			
PCL-R	.55	.64	.84	-.72	.60	-.47	.77	.77	-		
LSI-R	.56	.78	.75	-.70	.63	-.50	.66	.66	.86	-	
GRAM	.46	.50	.50	-.48	.40	-.34	.31	.41	.41	.50	-

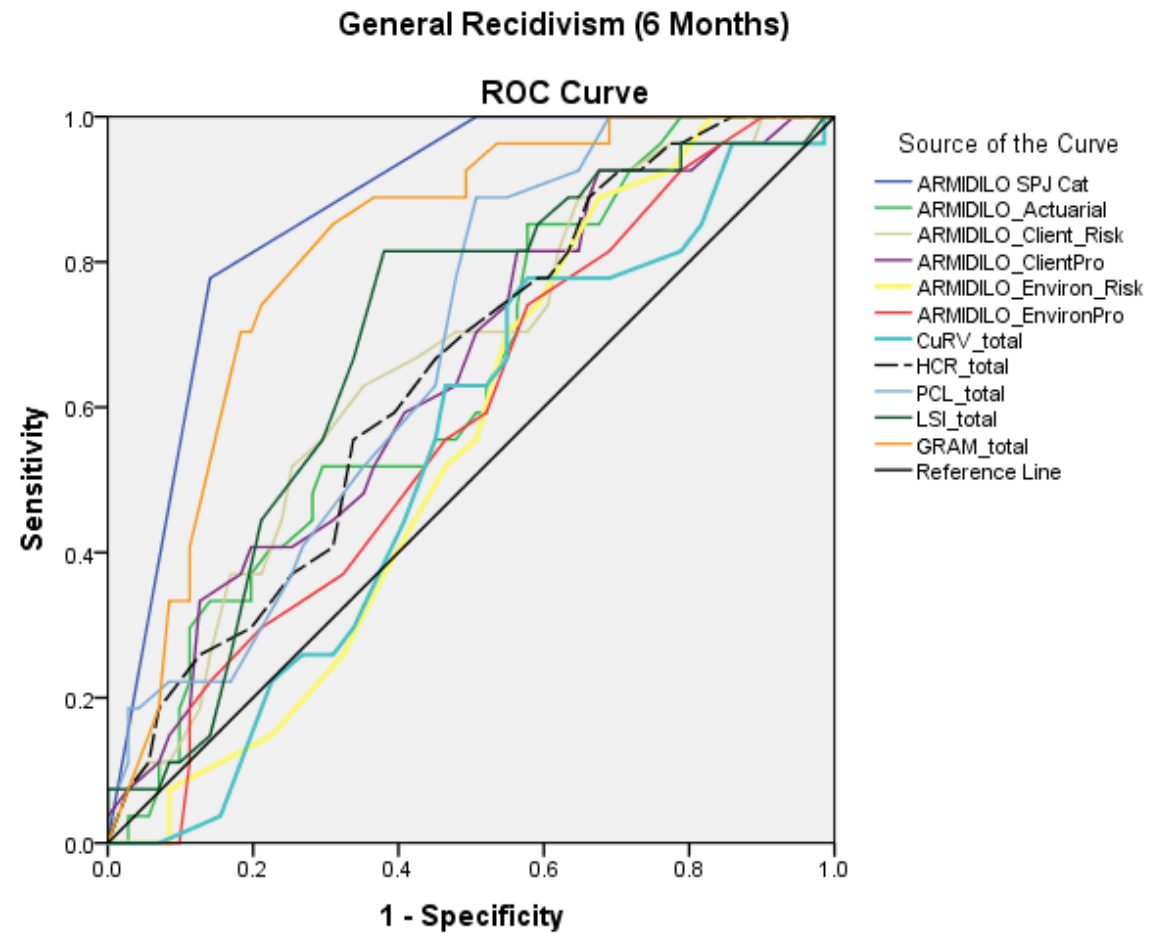
Note. All Pearson Correlation Coefficients are significant at  $p < .001$ . Act. = Actuarial; Envir. = Environment; Protect. = Protective.

# AUC at 3 months



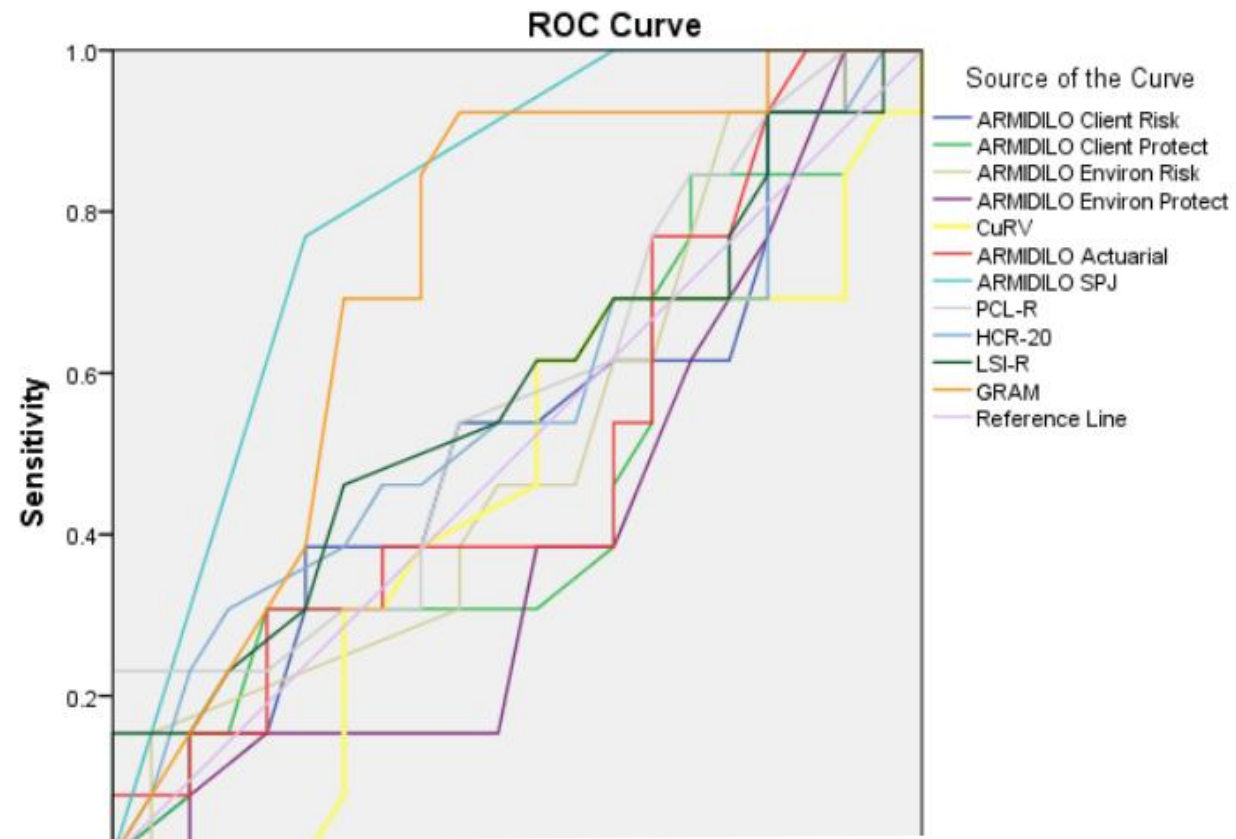
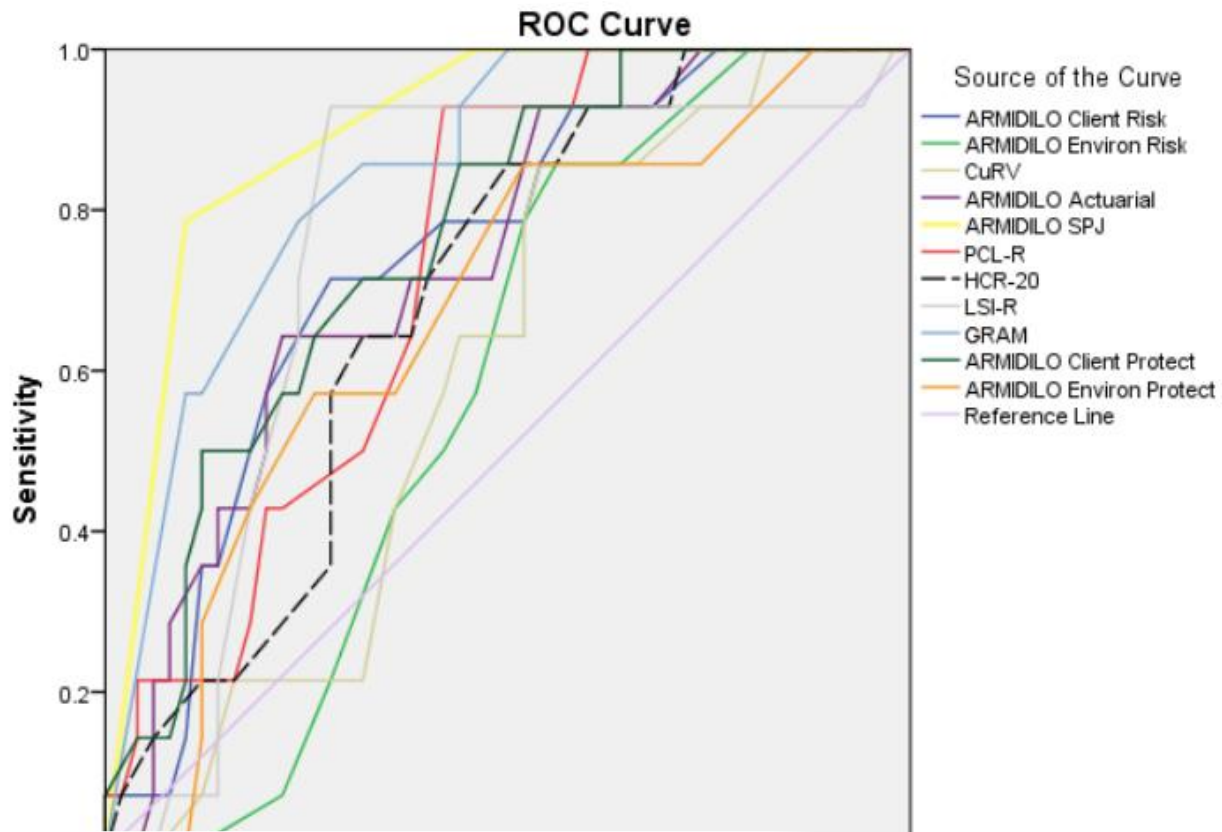
Diagonal segments are produced by ties.

# AUC at 6 months

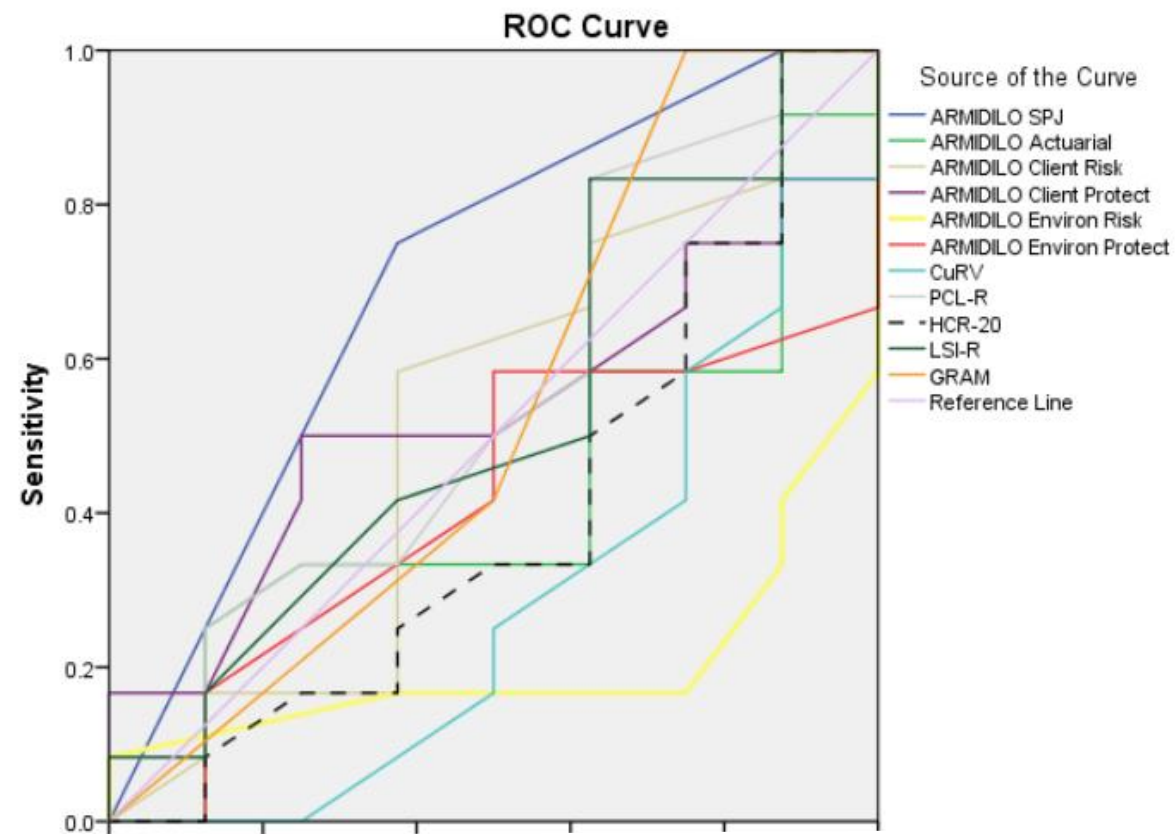
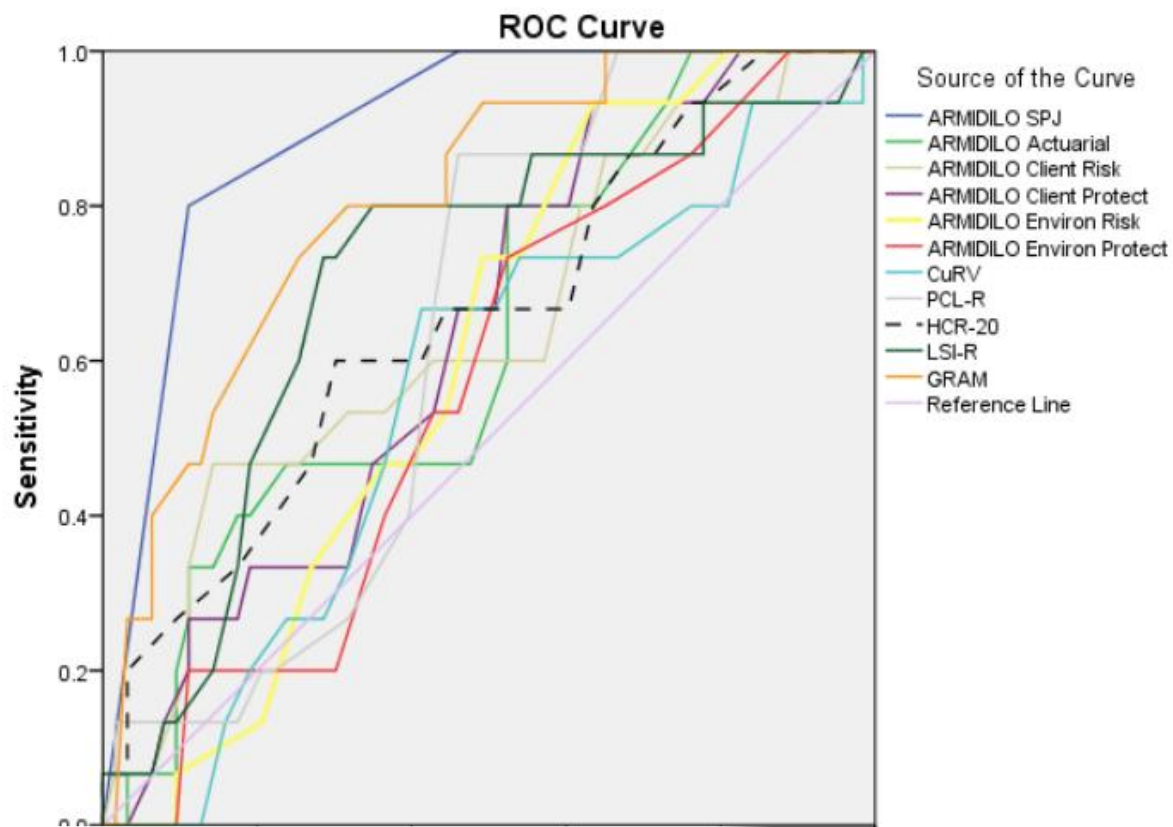


Diagonal segments are produced by ties.

# Aboriginal Participants



# Juvenile Participants



# Keenie, Frize & Gulotta, (2025)

Measure	One-year Follow-up				Three Years Follow-up			
	Total AUC (SE)	Violent AUC (SE)	Sexual AUC (SE)	Theft AUC (SE)	Total AUC (SE)	Violent AUC (SE)	Sexual AUC (SE)	Theft AUC (SE)
ARMIDILO- G	.677 (.048)*	.715 (.054)**	.453 (.074)	.660 (.053)*	.699 (.057)**	.708 (.046)**	.390 (.070)	.712 (.046)**
GRAM	.763 (.042)**	.773 (.045)**	.372 (.097)	.822 (.040)**	.724 (.048)**	.763 (.044)**	.334 (.091)	.807 (.040)**

\*p < .05. \*\*p < .001.

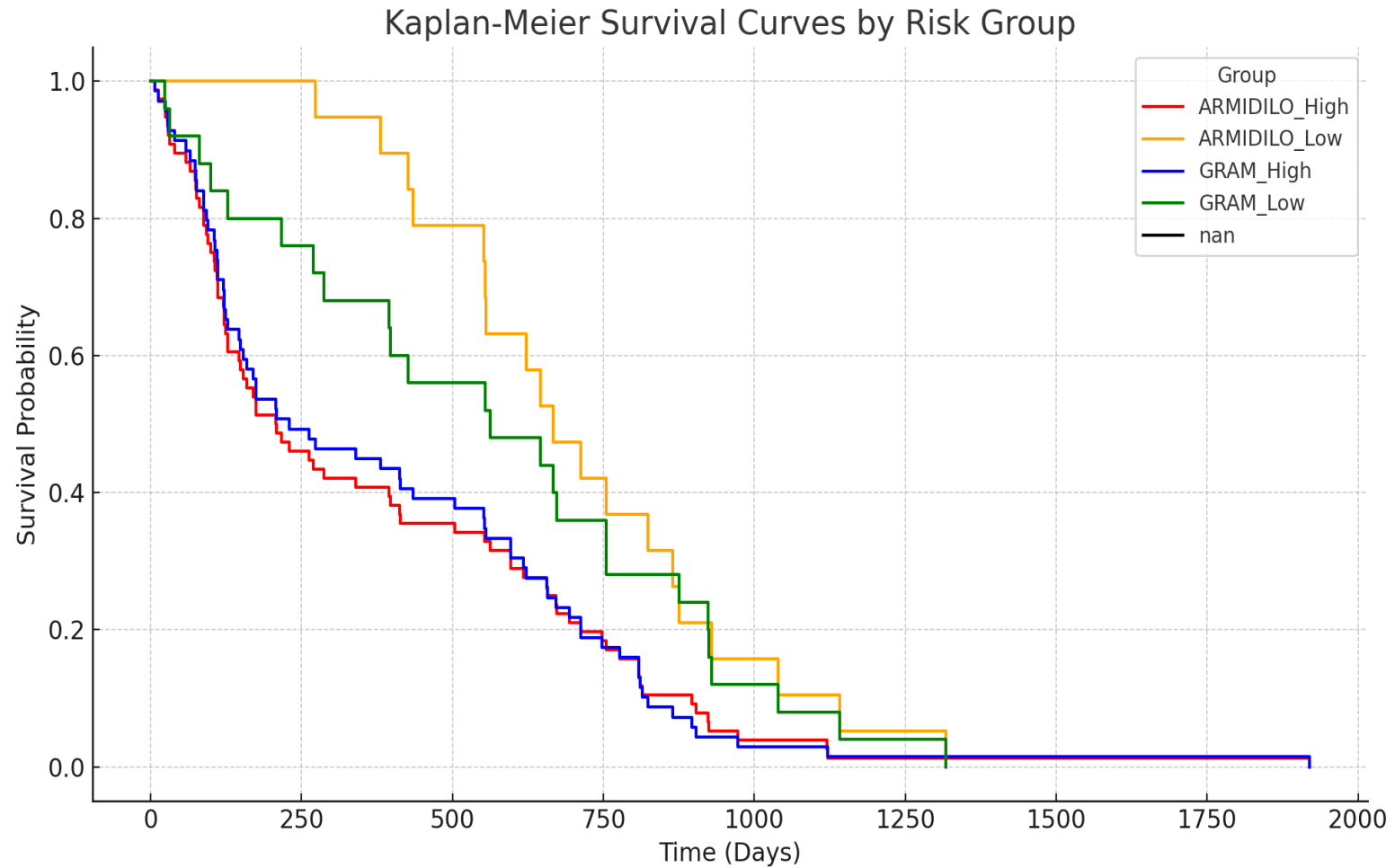
# Aboriginal participant 3-year follow up

*Area Under the Curve (AUC) of the Receiver Operating Characteristic Curve by Offence Type for ATSI Participants at One and Three Years Follow-up*

Measure	One-year Follow-up				Three Years Follow-up			
	Total AUC (SE)	Violent	Sexual	Theft	Total AUC (SE)	Violent	Sexual	Theft
		AUC (SE)	AUC (SE)	AUC (SE)		AUC (SE)	AUC (SE)	AUC (SE)
ARMIDILO-G	.641 (.093)	.709 (.076)*	.404 (.111)	.579 (.083)	.654 (.115)	.745 (.075)*	.402 (.089)	.659 (.082)
GRAM	.823 (.067)**	.659 (.079)	.489 (.074)	.777 (.069)*	.865 (.062)*	.769 (.079)*	.444 (.076)	.829 (.062)**

\*p < .05. \*\*p < .001.

# Time to reoffend



# Pouls & Jeandarme, 2022 (JMHRID)

38 adult SOs with a mean IQ of 63

Dutch translation of the ARMIDILO-S

1 year follow-up

AUC: ARMIDILO-S = .90 (SPJ) and .70 (num)

Excellent sensitivity but not as good specificity (82%)

## .... AND Manageability



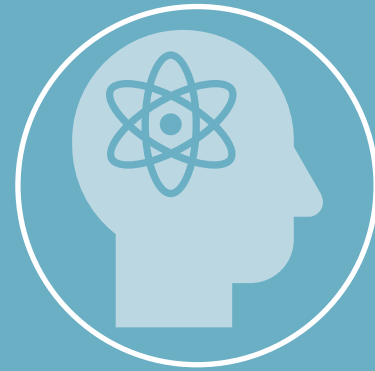
Its time sensitive



ARMIDILO as a  
framework for  
intervention  
(FDSTART)



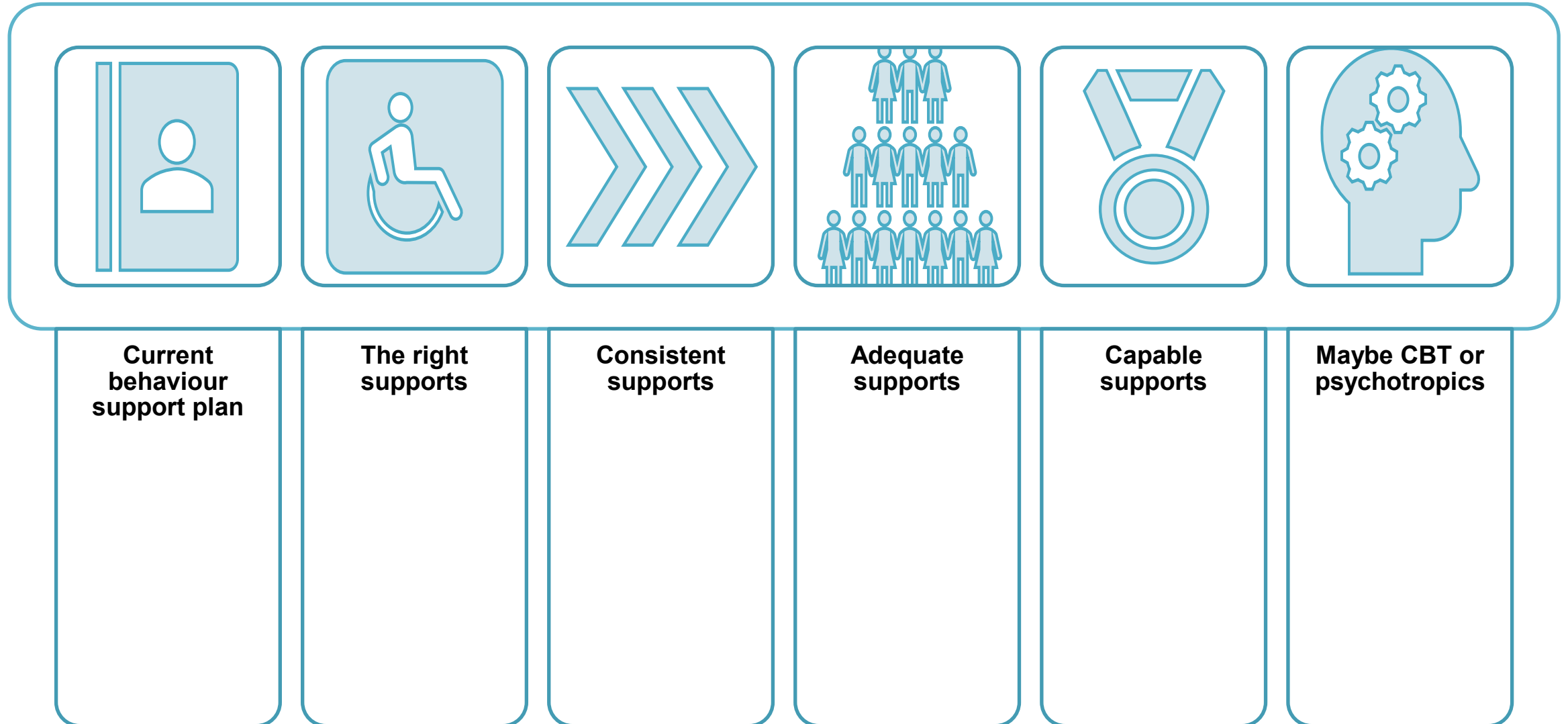
ARMIDILO  
assesses the  
system as much  
as it assesses the  
person



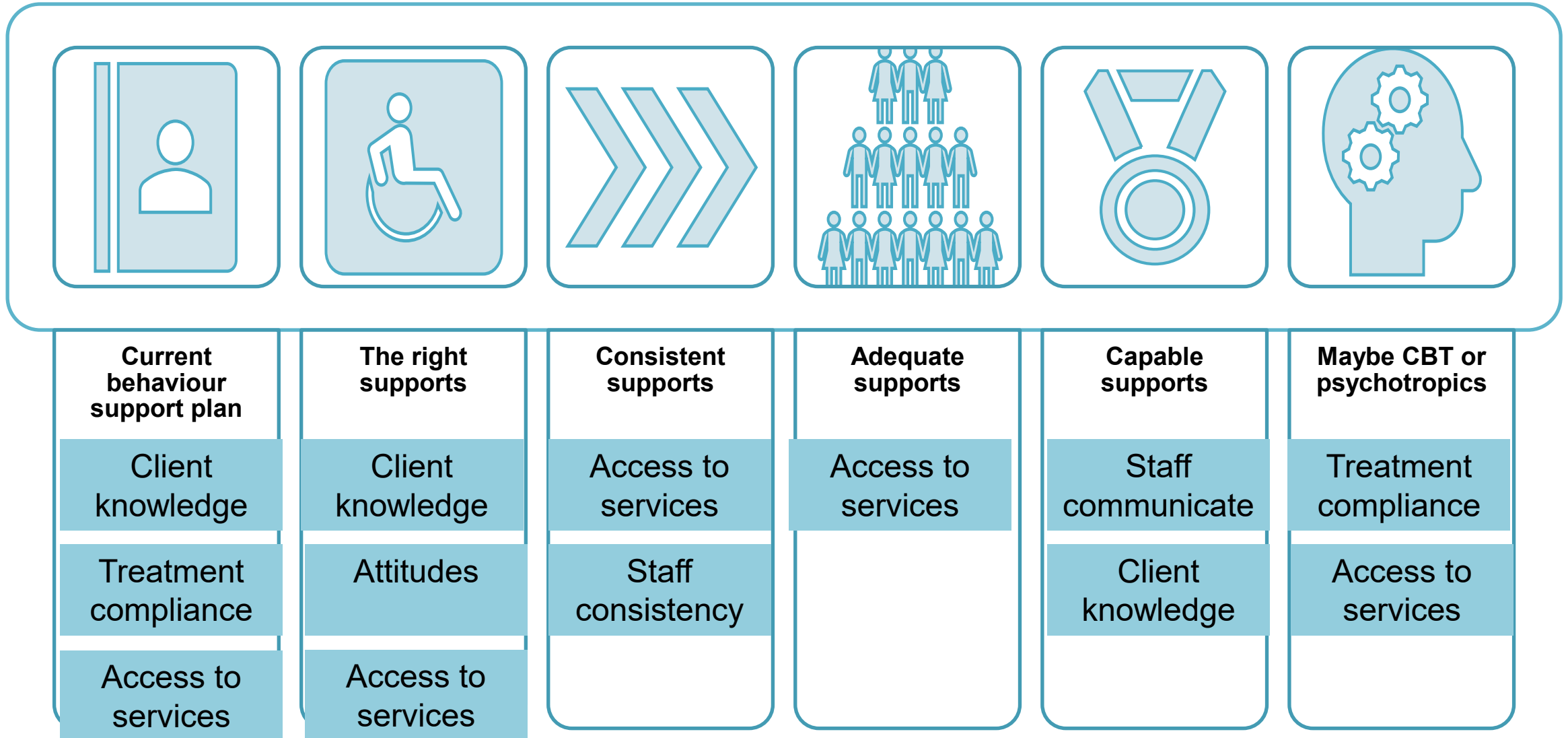
Addresses bias in  
recommendations



# Good intervention



# Good intervention



# Conclusions

- ✓ As accurate as any other tool going around
- ✓ Independent validation and across jurisdictions
- ✓ Some evidence of discriminant validity for ARMIDILO-S and ARMIDILO-G
- ✓ Strong construct validity for ARMIDILO-G considering strongest predictive validity at 6 months
- ✓ Evidence for a convergent approach
- ✓ Greatest strength as a risk management tool when the context is known
- ❖ Limited support for young people
- ❖ No current empirical evidence for women

# Contact us

## Referrals for Forensic Disability Services:

- ❑ Phone: 1300 390 709
- ❑ Email: [ForensicDisability.Access@dffh.vic.gov.au](mailto:ForensicDisability.Access@dffh.vic.gov.au)
- ❑ Website: <https://www.dffh.vic.gov.au/forensic-disability-services>
  
- ❑ [Matt.Frize@dffh.vic.gov.au](mailto:Matt.Frize@dffh.vic.gov.au)



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