



PCL:SV Cross-Cultural Fairness: A New Zealand Analysis

Ryan Botha, Tara Nichols & Devon Polaschek

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Introduction

PCL Scales

Ewert V. Canada

International cross-cultural research on the PCL-R

- Olver et al., 2018

Cross-Cultural Fairness research within NZ on the PCL: SV

- Botha & Polaschek, 2023

xAUC Research

- **Limitations of traditional AUC analysis**
- **Kallus & Zhou 2019** xAUC
- **Ashford et al., 2022; 2023** Application of xAUC to LS/RNR in an Australian sample comprised of Aboriginal and Torres strait islanders and non-Aboriginal and Torres Strait Islander males.

Research Questions

- How well the the PCL:SV predict recidivism for NZ Māori and NZ European individuals as assessed through xAUC analysis?
- How fairly does the PCL:SV predict recidivism across NZ Māori and NZ European individual in terms of error rate balance and predictive parity?

Method – Measures & Sample

PCL: SV:

- 12 item tool
- Qualified expert scorers

Recidivism:

- any new offence within five years of participant's prison release date that resulted in an adjudicated conviction derived from court outcomes.

Sample

- Imprisoned adult men assessed with the PCL:SV between May 1998 and December 2020
- N = 288 Total sample
- N = 186 NZ Māori
- N = 102 NZ European

Data Analysis

Calculate xAUC Values

The probability that a randomly selected participant from one ethnicity group who was reconvicted will have a higher PCL: SV score than a randomly selected participant who was not reconvicted from the other ethnicity group

Assess Domains of fairness

Error-rate Balance & Predictive parity

- False negative and false positive rates
- positive predictive value and negative predictive value
- PCL: SV cut-off $\neq < 18$

xAUC Sample Composition

Aboriginal and Torres Strait Islanders



**Did Not
Reoffend**

Reoffended

Non-Aboriginal and Torres Strait Islanders



**Did Not
Reoffend**

Reoffended

xAUC Test Sample 1



**Aboriginal & Torres Strait
Islanders - Did Not Reoffend**

**Non-Aboriginal & Torres Strait
Islanders - Reoffended**

xAUC Test Sample 2



**Non-Aboriginal & Torres Strait
Islanders - Did not Reoffend**

**Aboriginal & Torres Strait
Islanders - Reoffended**

Descriptive Results - NZ Māori and NZ European Sample Differences

Mean age: NZ Māori participants ($M = 34.97$, $SD = 8.52$) had significantly lower mean age at the time of PCL assessment ($t(154) = -2.85$, $p = .005$) compared to NZ European participants ($M = 38.9$, $SD = 12.44$)

RoC*RoI: significantly higher among NZ Māori ($M = .60$, $SD = .19$) compared to NZ European participants ($M = .47$, $SD = .27$; $t(153.4) = 4.41$, $p < .001$).

Follow up time: No difference was found in the average follow-up time between NZ Māori and NZ European subsamples.

Descriptive Results: xAUC Test Sample Differences

	xAUC Test Sample 1 (NZ Māori participants who were not reconvicted & NZ European who were)			xAUC Test Sample 2 (NZ European participants who were not reconvicted and NZ Māori who were)		
	Reconvicted (NZ European)	Not Reconvicted (NZ Māori)	Total	Reconvicted (NZ Māori)	Not Reconvicted (NZ European)	Total
5-year any reconviction	73 (73.7%)	26 (26.3%)	99	160 (84.7%)	29 (15.3%)	189
5-year violent reconviction	33 (27.5%)	87 (72.5%)	120	99 (58.9%)	69 (41.1%)	168

Findings - xAUC General Reconviction

	General Reconviction			
PCL:SV Domain	Test Sample 1 (n = 99)		Test Sample 2 (n = 189)	
	xAUC	95% CI	xAUC	95% CI
Facet 1 Interpersonal	.47	.35-.59	.59	.48-.70
Facet 2 Affective	.49	.36-.62	.55	.44-.66
Factor 1	.48	.36-.61	.58	.46-.70
Facet 3 Lifestyle	.59	.46-.71	.76**	.64-.87
Facet 4 Antisocial	.54	.41-.66	.78**	.67-.89
Factor 2	.57	.45-.70	.80**	.70-.91
Total PCL:SV Score	.53	.41-.65	.74**	.63-.86

Note: * Asymptotic sig < .05; ** Asymptotic sig ≤ .01

Findings - xAUC Violent Reconviction

PCL:SV Domain	Violent Reconviction			
	Test Sample 1 (n = 120)		Test Sample 2 (n = 168)	
	xAUC	95% CI	xAUC	95% CI
Facet 1 Interpersonal	.41	.29-.54	.52	.43-.61
Facet 2 Affective	.45	.33-.57	.52	.44-.62
Factor 1	.42	.30-.54	.51	.42-.60
Facet 3 Lifestyle	.49	.36-.61	.65**	.56-.74
Facet 4 Antisocial	.54	.42-.66	.76**	.68-.83
Factor 2	.52	.40-.64	.74**	.66-.82
Total PCL:SV Score	.47	.34-.60	.65**	.57-.74

Note: * Asymptotic sig < .05; ** Asymptotic sig ≤ .01



Fairness Domains:

Error-Rate Balance and Predictive Parity

Error-Rate Balance - General Reconviction

Reconviction type	Predicted recidivism	Ethnicity and Reconviction Status			
		NZ Māori		NZ European	
General		Reconvicted (n = 157)	Not reconvicted (n = 26)	Reconvicted (n = 73)	Not reconvicted (n = 29)
	Yes (≥ 18) (n = 187)	75.2 % (True positive)	61.5 % (False positive)	61.6 % (True positive)	27.6 % (False positive)
	No (< 18) (n = 98)	24.8 % (False negative)	38.5 % (True Negative)	38.4 % (False negative)	72.4 % (True negative)

Error-Rate Balance - Violent Reconviction

Reconviction type	Predicted recidivism	Ethnicity and Reconviction Status			
		NZ Māori		NZ European	
Violent		Reconvicted (n = 96)	Not reconvicted (n = 86)	Reconvicted (n = 33)	Not reconvicted (n = 69)
	Yes (≥ 18) (n = 187)	77.3% (True Positive)	68.6% (False Positive)	54.5% (True Positive)	50.7% (False Positive)
	No (< 18) (n = 98)	22.7% (False Negative)	31.4% (True Negative)	45.5% (False Negative)	49.3% (True Negative)

Predictive Parity

	Any Reconviction		Violent Reconviction	
Predictive Value	NZ Māori % (n)	NZ European % (n)	NZ Māori % (n)	NZ European % (n)
Positive Predictive Value	88.1% (118)	84.9% (45)	56.0% (75)	34.0% (18)
Negative Predictive Value	20.4% (10)	42.9% (21)	55.1% (27)	69.4% (34)

Discussion - xAUC

- Findings were in contrast with extant research on the PCL measures applying traditional discrimination analysis.
- In line with previous research (Ashford et al., 2022; Ashford et al., 2021)
- Further demonstrates the utility of conducting xAUC alongside traditional AUC analyses, to assess disparities in recidivism discrimination, between and within groups, and to add to our understanding of cross-cultural disparities in forensic risk assessment.

Discussion - Fairness Domains

Error-rate balance

- FPR higher among NZ Māori participants & higher FNRs among NZ European participants (18-point cut-off)

Predictive Parity

- General reconviction: Similarly high PPV across groups. Considerably higher NPV among NZ European participants.
- Violent reconviction: more pronounced difference in PPV
 - higher proportion of NZ Māori (56.0%) individuals classified as high risk were reconvicted for violence than NZ European (34.0%) individuals classified as high risk.

Limitations

- Limited score distribution
- Small sample size
- Sample differences between NZ Māori and NZ European on risk relevant demographic factors
- Lack of proximity and standardization of time between PCL:SV administration and release date.

Future Directions

- Larger more representative sample, larger scoring variance.
- Matched comparison groups on risk-relevant factors
- PCL:SV more proximal to the release date & control for the time of assessment in analyses.
- Other forensic clinical risk assessment tools, those routinely used to inform sentencing, management, and treatment provision (VRS, HCR-20, LSCMI etc.)

Pātai / Questions

References

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