

# Forensic Assessment: Some Problems and Solutions

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# FORENSIC ASSESSMENT

## ■ Purpose

- ◆ Formulation - Management
- ◆ Research - Evidence base

## ■ Process

- ◆ Collation of relevant information
- ◆ Structuring data
- ◆ Extrapolation

# SOME PROBLEMS: The King's Diaphanous Nightie

- **The veracity problem**
- **The reification problem**
- **Deterministic demand problem**
- **The complexity problem**
- **The technical problem**

# AMBIGUITY OF TEST SCORES

<b>Profile</b>	<b>Score</b>
<b>1 1 1 0 0 0</b>	<b>3</b>
<b>0 0 0 1 1 1</b>	<b>3</b>
<b>0 1 0 1 0 1</b>	<b>3</b>

# THE CARE PROGRAMME GUIDELINES 1990

- **Standards of Reasonable Care**

- patients must receive the quality and complexity of service appropriate to their **assessed level of need.**

# SOME SOLUTIONS

- **The Panglossian Solution**
- **Biosignal/Performance Test Solution**
- **The Idiographic Solution**
- **The Psychometric Modelling Solution**

# A CUMULATIVE MODEL

**Patient A**

**Patient B**

**Patient C**

**Patient D**



**Uses Weapons**

**Anger**

**Impulsive**

**Chaotic Childhood**

# CUMULATIVE MODELS

## ■ Model Profiles

- ◆ 1 1 1 1 1 1
- ◆ 1 1 1 1 1 0
- ◆ 1 1 1 1 0 0
- ◆ 1 1 1 0 0 0
- ◆ 1 1 0 0 0 0
- ◆ 1 0 0 0 0 0
- ◆ 0 0 0 0 0 0

## ■ Specific Models

- ◆ Guttman Scalograms
- ◆ Mokken DMM
- ◆ Rasch (1 Parameter)

# THE VALUE OF THE RASCH MODEL

- **Imposition of a Clear and Simple Structure**
- **Conjoint Additive Properties**
- **Sample Free Calibration**
- **Test Free Measurement**
- **Estimation of Item and Person Fit**

# THE RASCH MODEL

$$p_{ij} = \frac{1}{1 + e^{(\theta_i - \delta_j)}}$$

# SOME APPLICATIONS

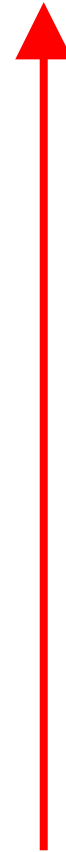
- **Risk Assessment Checklist (RAMAS)**
- **MMPI Scales**
- **PCL-R**
- **Sex Offender Inspection Time Tasks**

## Summary of Classical and Mokken Parameters for the MMPI-PD Scales

	Mean	S.D.	$\alpha$	H
<b>Histrionic</b>	<b>6.50</b>	<b>2.49</b>	<b>0.57</b>	<b>0.37</b>
<b>Narcisistic</b>	<b>5.81</b>	<b>2.47</b>	<b>0.51</b>	<b>0.21</b>
<b>Borderline</b>	<b>6.42</b>	<b>3.62</b>	<b>0.76</b>	<b>0.18</b>
<b>Antisocial</b>	<b>8.73</b>	<b>3.59</b>	<b>0.70</b>	<b>0.36</b>
<b>Depression</b>	<b>6.57</b>	<b>3.78</b>	<b>0.79</b>	<b>0.33</b>
<b>Obsessional</b>	<b>6.67</b>	<b>2.74</b>	<b>0.66</b>	<b>0.11</b>
<b>Passive-Agg.</b>	<b>5.69</b>	<b>3.28</b>	<b>0.75</b>	<b>0.41</b>
<b>Paranoid</b>	<b>4.41</b>	<b>3.14</b>	<b>0.76</b>	<b>0.28</b>
<b>Schizotypal</b>	<b>4.96</b>	<b>4.96</b>	<b>0.80</b>	<b>0.35</b>
<b>Avoidant</b>	<b>6.52</b>	<b>6.52</b>	<b>0.78</b>	<b>0.16</b>
<b>Schizoid</b>	<b>5.35</b>	<b>5.35</b>	<b>0.74</b>	<b>0.32</b>

# Cumulative Order for Schizotypy

- **Paranoia**
- **Odd Thoughts**
- **Social Isolation**
- **Sensitivity**

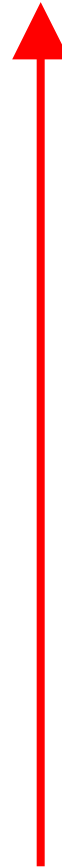


## Fitting the Rasch Model to the 24 Schizotypy Items

Item	Affectivity	$\beta$	S.E.	Misfit
110	0.18	1.09	0.08	0.37
334	0.19	0.96	0.08	-0.48
40	0.19	0.95	0.08	-0.13
448	0.19	0.92	0.07	1.59
43	0.21	0.75	0.07	-0.19
349	0.22	0.70	0.07	2.24
345	0.23	0.63	0.07	1.62
333	0.24	0.57	0.07	1.37
344	0.25	0.46	0.07	0.23
328	0.25	0.44	0.07	1.82
335	0.26	0.42	0.06	1.59
284	0.26	0.39	0.06	0.88
286	0.27	0.35	0.06	-0.99
366	0.33	-0.00	0.06	1.45
384	0.39	-0.37	0.06	-0.12
299	0.39	-0.38	0.06	-0.78
343	0.41	-0.47	0.06	-2.32
473	0.41	-0.49	0.06	-1.20
362	0.43	-0.57	0.06	-0.71
33	0.45	-0.69	0.06	-2.19
374	0.50	-0.94	0.06	-0.42
377	0.42	-1.05	0.07	-1.29
134	0.65	-1.72	0.07	-2.64
100	0.67	-1.87	0.06	-2.62

# Cumulative Order for ASPD

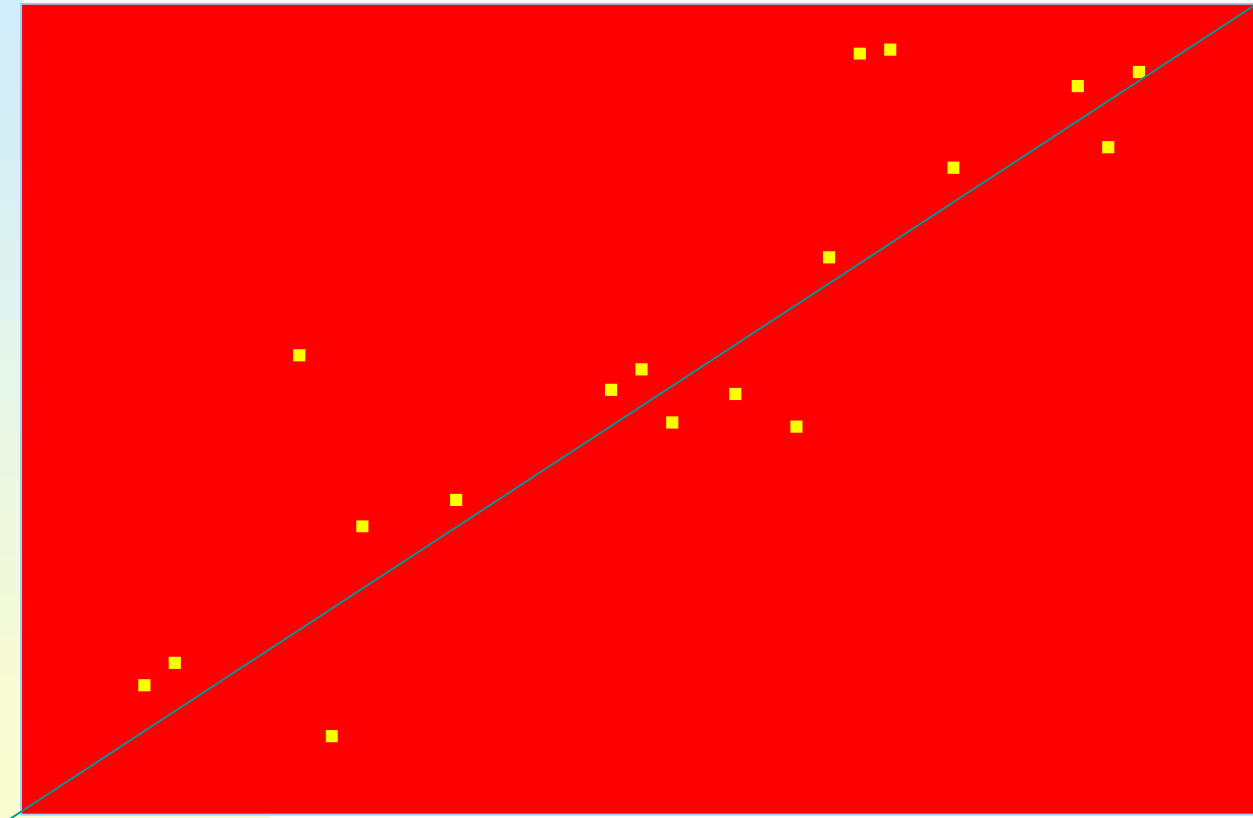
- **Callous**
- **Blunt Affect**
- **Impulsive**



# Male vs Female DIF on ASPD Scale

Item	Female $\delta$	Male $\delta$	<i>z</i>
Q181	-1.701	-1.448	1.810
Q465	-1.624	-1.349	1.856
Q21	-1.193	-0.022	<b>3.429</b>
Q475	-1.107	-1.666	1.945
Q56	-0.998	-0.756	0.580
Q38	-0.680	-0.647	0.167
Q419	-0.260	-0.175	0.454
Q316	-0.127	-0.006	0.751
Q49	-0.109	-0.081	0.451
Q205	-0.053	-0.313	1.120
Q336	0.264	-0.191	2.244
Q271	0.433	-0.326	<b>2.822</b>
Q456	0.566	0.397	0.538
Q311	0.648	1.285	2.142
Q250	0.763	1.296	1.749
Q145	0.960	0.791	0.527
Q471	1.365	1.136	0.444
Q118	1.383	0.875	1.126
Q269	1.471	1.202	0.978

# Item Difficulty Plot: Male vs. Female ASPD Scale



# The King's Stout Hessian Undergarments

- **Uncomfortable**
  - ◆ Does not *irradicate* problem of self report
  - ◆ There are cases where the model will not hold
  - ◆ Requires rethinking and training
  
- **But covers his nakedness**
  - ◆ Provides a stab at axiomatic measurement
  - ◆ Provides a clear measurement model
  - ◆ Provides a person fit