Adolescent Pathological Gambling: Using IRT to construct a scale based on the new Gambling Disorder criteria

Caterina Primi, Francesca Chiesi & Maria Anna Donati
NEUROFARBA, Section of Psychology,
University of Florence - Italy

9th Conference of the International Test Commission
July 2-5, 2014
San Sebastian - Spain

From DSM-IV to DSM-V

✓The name was changed from *Pathological Gambling* to ***Disordered Gambling***
✓The disorder was reclassified from *Impulse-Control Disorders not elsewhere classified* to ***Substance-Related and Addictive Disorders***
✓Nine criterions: One criterion (to commit illegal acts) was eliminated
✓Lower threshold for diagnosis from five to four criteria
✓Specified time period; symptoms must be present during a 12 month time period

Aim

Since large-scale prevalence studies suggested that **adolescents** are a high-risk group for developing problem gambling, our aim was to develop a new brief scale to assess pathological gambling among adolescents (**Gambling Behavior Scale for Adolescents, GBSA**) referring to the DSM-V and applying Item Response Theory (IRT).

Method

Participants

1187 adolescent gamblers attending high school (59% males, mean age=15.66 years, *SD*=1.71).

Scale development

A set of 45 items (5 for each DSM-V criterion) was developed. In a pilot study, items were evaluated at both qualitative and quantitative levels. As a result, some items were removed and other items were adapted obtaining a set of 33 items (Table 1).

Table 1. *Synthesis of the steps in the development of the Gambling Behavior Scale for Adolescents (GBSA).*

DSM-V Criterions	Initial Step: 45 items	Second step: 33 items	Third step: 26 item	Final Step: 9 items
Tolerance	5	3	3	1
Withdrawal	5	4	4	1
Loss of Control	5	4	4	1
Preoccupation	5	3	1	1
Escape	5	3	2	1
Chasing	5	4	1	1
Lying	5	4	4	1
Risk/lose relationships/opportunities	5	5	5	1
Bailout	5	3	2	1

We investigated the unidimensionality of the 33-item version evaluating the presence of local dependence (LD). None of the LD statistics were greater than 10, attesting the unidimensionality of the scale.

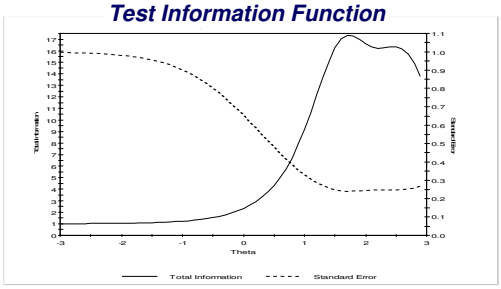
Item selection and calibration with IRT *(IRTPRO software)*

We tested the fit of the unidimensional two parameter model (*a*= discrimination, *b* = severity). Seven items were eliminated given a significant S-χ^2 value (p <.001). Then, we performed the IRT calibration with the remaining 26 items. For each criterion we selected the item with the higher discrimination value ($a > 2$) (Table 1). Finally, we performed a new calibration with the remaining 9 items (Table 2).

Table 2. *Item factor loadings (λ), discrimination (a) and category threshold (b) estimates with standard errors.*

Item	DSM-V	λ	a	b_1	b_2
1	Tolerance	.67	3.50 (0.34)	1.66 (0.10)	2.83 (0.22)
2	Withdrawal	.69	2.98 (0.29)	1.55 (0.09)	2.35 (0.18)
3	Loss of Control	.63	3.02 (0.38)	1.72 (0.11)	2.52 (0.18)
4	Pre-occupation	.52	1.89 (0.19)	1.35 (0.10)	2.21 (0.17)
5	Escape	.68	2.29 (0.25)	1.62 (0.11)	3.02 (0.24)
6	Chasing	.53	1.66 (0.16)	0.82 (0.07)	2.80 (0.21)
7	Lying	.58	2.53 (0.30)	1.56 (0.10)	2.56 (0.19)
8	Risk/lose relationships/opportunities	.68	3.19 (0.38)	1.65 (0.10)	2.65 (0.17)
9	Bailout	.70	1.84 (0.19)	1.52 (0.11)	2.87 (0.24)

Test Information Function



The 9-item GBSA scale accurately measures from mild to high gambling severity levels.

Validity

Table 3. *Validity measures*

	SOGS-RA	Cognitive distortions about gambling	Gambling Behaviour Frequency
GBSA	.55**	.65**	.44**

**p<.001

Correlations of the Gambling Behavior Scale for adolescents (GBSA) score with a DSM-III-R measure of pathological gambling in adolescents (SOGS-RA) and gambling related constructs were high and in the expected direction.

Discussion & Conclusion

The GBSA is an efficient tool to assess the DSM-V Gambling Disorder criteria in adolescents.

Contact: primi@unifi.it