



Methodological issues

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A reliability and validity study of online (vs. paper-and-pencil) versions of the General Health Questionnaire-28 (GHQ-28) and the Symptoms Check-List-90-R (SCL-90-R)

Introduction

- Online assessment as a necessity
- Some advantages:
 - Easy and immediate scoring
 - Missing data handling
- The question: Will the mode of administration (Internet) affect the psychometric characteristics of assessment tools?

The literature

- Proposed variables that could affect Internet results:
 - Social desirability (Booth-Kewley, et al., in press)
 - Self-disclosure (Suler, 2004)
 - Computer anxiety (Shulenberg and Yutrzenka, 2004)
- Different subjects in which literature exists:
 - Panic/agoraphobia (Carlbring et al., in press)
 - Youth independent living (Bressani and Downs, 2002)
 - Aggression and impulsivity (Suris et al., in press)
 - Quality of life in diabetes (Pouwer et al., 1998)

Our work: The Method

- The questionnaires

- GHQ-28 (Goldberg and Hillier, 1979)
- SCL-90-R (Derogatis, 1977)

- N=100, psychology students

Women	78
Men	22

- Age

Mean	27.4
SD	10.01
Unmarried	83
Married	17

Our work: The Procedure

- Paper-pencil → Internet
 - Test: Paper and pencil
 - Gap: Median = 17 days
 - Retest: Internet
 - Scroll-page & spread box-text

GHQ-28 reliability

	Paper and pencil		Internet		r**
	Mean (SD)	α	Mean (SD)	α	
GHQ-28					
A	4.77 (3.53)	.84	4.32 (3.48)	.84	.53
B*	4.86 (3.80)	.83	4.19 (3.35)	.79	.72
C	6.81 (2.33)	.71	6.91 (2.21)	.79	.30
D	1.27 (2.35)	.85	1.21 (2.51)	.84	.65
Total	17.71 (9.13)	.90	16.63 (9.00)	.90	.69

*Mean differences were statistically significant ($p < 0.05$)

**All r values were statistically significant ($p < 0.01$)

GHQ-28 factorial structure

GHQ-28 Internet			
Four rotated factors solution (55.86%)			
Factor 1 (16.01%)	Factor 2 (14.33%)	Factor 3 (13.10 %)	Factor 4 (12.42%)
All D items except D5	Items A2, A3 and all B items except B5	Items A1, A4, A5, A6, A7, B5, and D5	All C items

GHQ-28 factorial structure

GHQ-28 paper & pencil			
Four rotated factors solution (53.98%)			
Factor 1 (16.18%)	Factor 2 (14.54%)	Factor 3 (13.59 %)	Factor 4 (9.67%)
All D items plus B5, C2 and C6	All A items	All B items except B5, plus C7	Items C1, C3, C4 and C5

SCL-90-R reliability

	Paper and pencil		Internet		r***
	Mean (SD)	α	Mean (SD)	α	
SCL-90-R					
Soma**	.58 (.55)	.85	.39 (.41)	.82	.73
Ob-Com**	.61 (.59)	.84	.45 (.50)	.85	.74
Suscept Inter**	.62 (.51)	.78	.45 (.51)	.83	.83
Depression**	.66 (.60)	.88	.53 (.62)	.92	.74
Anxiety**	.47 (.46)	.81	.36 (.38)	.79	.70
Hostility**	.40 (.43)	.72	.29 (.41)	.76	.63
Phobic anxiety	.18 (.31)	.62	.15 (.29)	.72	.84
Paranoid Ideation*	.42 (.51)	.73	.34 (.49)	.81	.77
Psicoticism	.20 (.33)	.75	.19 (.32)	.76	.86
GSI (Total)**	.50 (.40)	.96	.37 (.36)	.97	.82

SCL-90-R factorial structure

- We failed to replicate the 9 factors original structure
- Instead a big unrotated factor that explained more than 25% of the variance appeared
- 85 out 90 items showed .30 or bigger loads on this factor

Discussion

■ GHQ-28

- High internal consistency (all $\alpha \geq .78$)
- Equivalence data smaller than expected in scales A ($r = .53$) and C ($r = .30$)
- Fairly good factorial validity. Scales C and D were more consistent

■ SCL-90-R

- High internal consistency (all $\alpha \geq .72$)
- Correlations supports the equivalence hypothesis ($r = .63 - .86$)
- Mean differences in 'somatization' and 'GSI' could be taken as a small effect of a treatment
- A single factor structure appeared

Conclusion

- Alpha coefficients and Pearson's correlation has values that supports equivalence (GHQ-28 scales A and C were smaller than expected)
- Small mean differences between forms (SCL-90-R) could recommend to gather Internet normative data (Buchanan, 2003)
- Both factorial structure match recent research on these subject (e. g. Gibbons and Hilda, 2004; Schmitz et al., 2000)

Suggestions

- Study other samples (normal and clinical)
- Using a counterbalanced design: paper-internet and internet-paper
 - Recent study (Vallejo et al., in preparation) N=40, C scale of GHQ-28 lower scores in Internet, 3.5 vs. 7.83 ($t=8.02$, $p<.001$), $r=.48$ ($p<.01$)
- Cautions with the use of screening psychopathological questionnaires in the Internet

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Thank you very much for your attention