

Capturing youth drinking: what's been done and what needs to be done in psychometrics

Dr Paul Toner



UNIVERSITY *of York*
The Department of Health Sciences

SSA SOCIETY FOR THE
STUDY OF
ADDICTION

Background

Limited comparability.

Significant difference between boys and girls

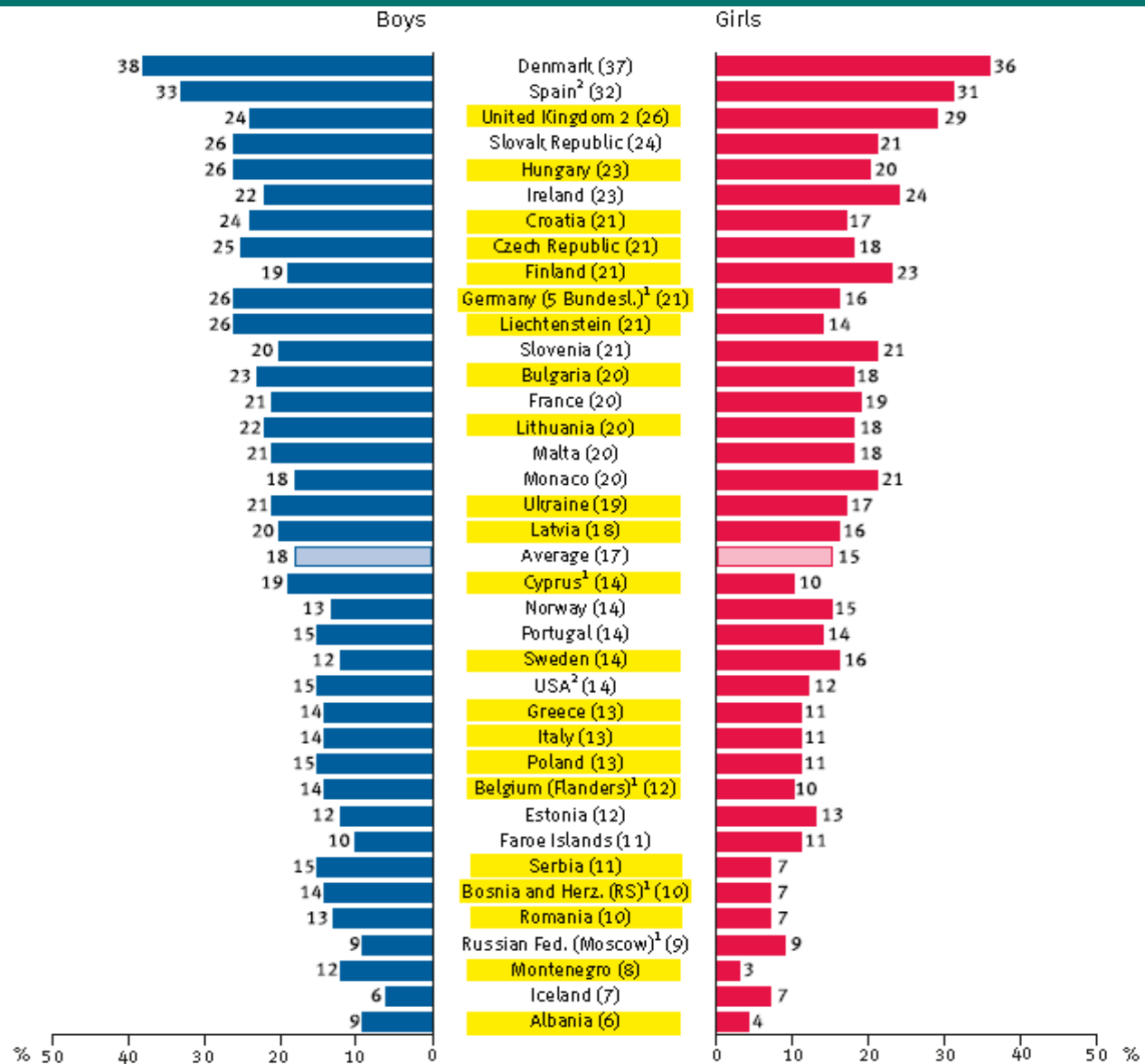


Figure 6b
Being drunk during the past 30 days by gender. 2011.
Percentages. (Table 22)

Hibbell, B., Guttormsson, U., Ahlstrom, S., Balakireva, O., Bjarnason, T., Kokkevi, A. & Kraus, L. (2012). *The 2011 ESPAD Report: Substance Use among Students in 36 European Countries*. Stockholm: The Swedish Council for Information on Alcohol and Other Drugs (CAN).

Why needed?

- Expert guidance (NICE, 2010) and recent reviews have highlighted the pressing need for a reliable and valid, age appropriate alcohol screener for young people.
- NICE public health guidance 24 states under recommendations for research:

“Which screening tool should be considered as the 'gold standard' for assessing the drinking behaviour of those under the age of 18?” (p.43)

Need for a screener

- Patton et al. (2014) review of reviews:

*"Screening is perhaps the most important element of screening and brief intervention (SBI) – reactivity to assessment has an impact upon outcome and screening itself may be the briefest of BIs – and yet **no single screening instrument has been identified that reliably determines a young person's risk status.**"*

(p.210)

Programme Aim

- To develop a psychometrically validated alcohol criterion measure(s) for young people.

Phase 1: SR

- Systematic review to evaluate the validity of available instruments for screening and assessing alcohol consumption or problems in young people aged 24 and under.
- Highlight the best performing measures for screening and assessment based on psychometric properties and validation studies supporting their use.

SR Objectives

- Summarise and psychometrically evaluate validation studies comparing the accuracy of an alcohol measure with a previously validated alcohol questionnaire or diagnostic interview for identifying hazardous or harmful drinking in young people.
- Present a conceptual map of included instruments on key characteristics: e.g. screening/assessment measure or both.

Search Methods

- The following electronic databases were searched: MEDLINE, EMBASE, PsycINFO, and Social Sciences Citation Index (Web of Science).
- For grey literature: The Health Management Information Consortium (HMIC) database and University of Washington – Alcohol and Drug Abuse Institute Library Search.

Search Strategy

- Three sets of search terms were combined:
 - 1) Alcohol use and alcohol problems including substance use to identify measures with alcohol items of interest;
 - 2) Young people;
 - 3) Validation studies.

- The Social Science Citation Index was utilised for reverse and forward citation searching.

Eligibility Criteria

- Validation studies published in English from 1980 onwards.
- *Participants* – 80% or above of participants aged 24 and under.
- *Index tests* - Screening or assessment measures for alcohol use or problems only.
- *Comparators* - Previously validated questionnaires or diagnostic interviews assessing alcohol use or problems (reference tests).
- *Outcomes* - Predictive (including concurrent) validity of the screening or assessment measure being validated.

Data Extraction

Data collection on instruments identified:

- Predictive Validity - Standardised Regression Coefficient OR Odds Ratio OR Correlations OR AUC - Area Under the Curve OR % Sensitivity; % Specificity OR % PPV - Positive Predictive Values; % NPV - Negative Predictive Values OR Likelihood Ratio.
- Internal Validity - Item-to-total Correlations; Percentage of explained variance by proposed factor model.

Data Extraction (continued)

- Reliability - (Adjusted) Cronbrach's Alpha; Guttman's Lambda; Omega; Pearson Correlation; Intraclass Correlation Coefficient (ICC).
- Information on Acceptability/Feasibility.

Quality Thresholds

Predictive
Validity >0.7
(AUC, Sen >0.8)

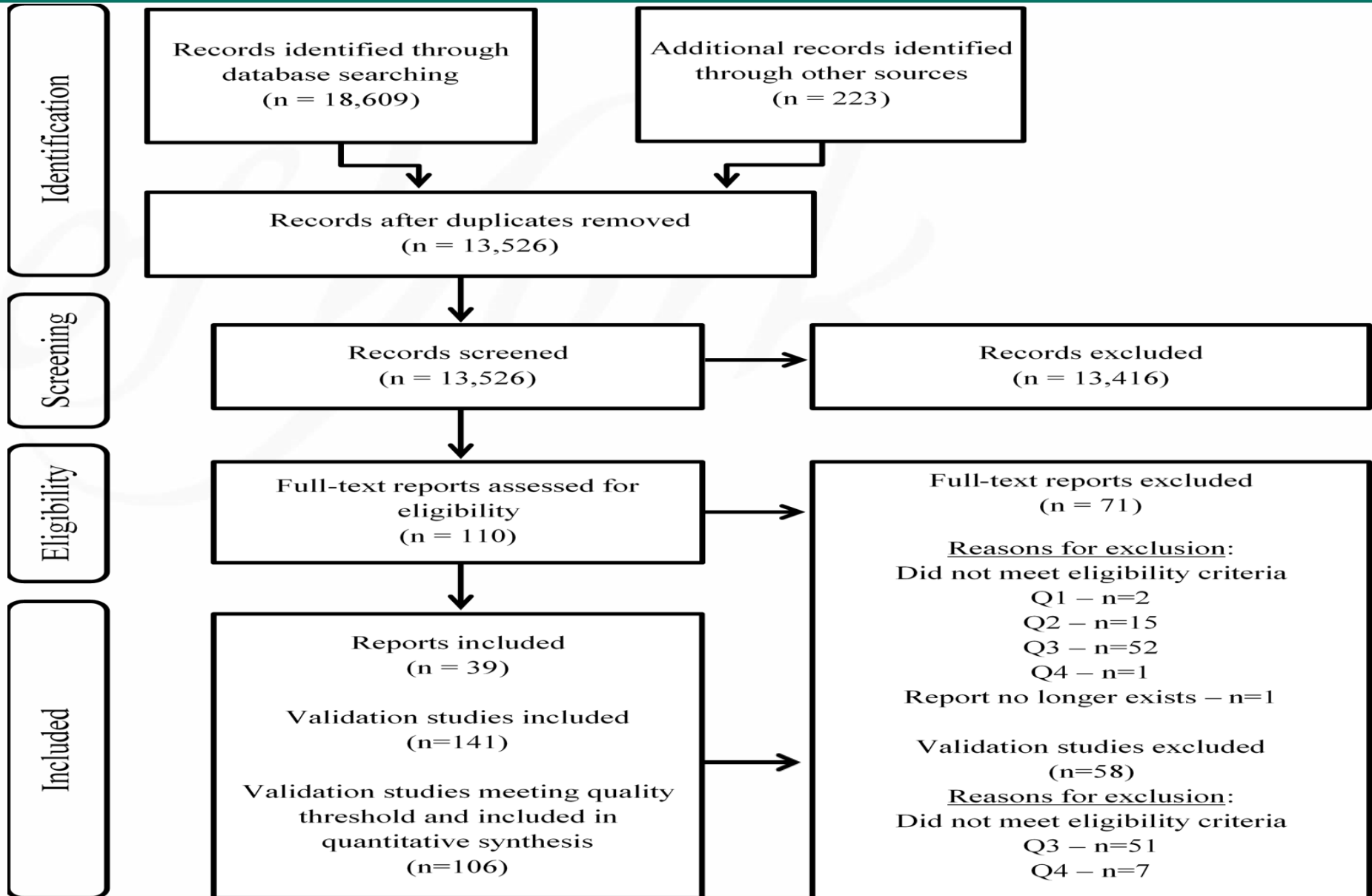
Internal
Reliability
 >0.8

Test-retest
Reliability
 >0.7

Quality Assessment

- Only studies meeting those thresholds are assessed for quality using modified:
- COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN).
- A QUality Assessment tool for Diagnostic Accuracy Studies (QUADAS-2).

Findings



Screening Measures

Dichotomous Measures	Validation Studies (under thresholds)	Validation Studies (over thresholds)	Reference tests (for studies over thresholds)
Alcohol Use Disorders Identification Test (AUDIT): Items 1-10	2	12	9 DSM; 1 DDQ; 1 TLFB; 1 NHSDA
Modified Alcohol Use Disorders Identification Test (AUDIT): Items 1-10	0	2	2 DSM
Alcohol Use Disorders Identification Test - Consumption (AUDIT-C): Items 1-3	0	11	6 DSM (4 same report); 3 DDQ (3 same report); 1 CAPS:SE, 1 CAPS:CS
Modified Alcohol Use Disorders Identification Test (AUDIT): Consumption subscale: Items 1-3	0	1	1 DSM
Alcohol Use Disorders Identification Test (AUDIT): Items 4,5,6,7,8,10	0	4	4 DSM (same report)
Alcohol Use Disorders Identification Test (AUDIT): Items 4-10	0	2	1 CAPS:SE, 1 CAPS:CS
Modified Alcohol Use Disorders Identification Test (AUDIT): Items 4-10	0	1	1 DSM
Brief Alcohol Use Disorders Identification Test (Brief AUDIT): Items 3,5,8	0	1	1 AUDIT
Fast Alcohol Screening Test (FAST): Items 3,5,8,10	0	1	1 DSM

Screening Measures

Dichotomous Measures	Validation Studies (under thresholds)	Validation Studies (over thresholds)	Reference tests (for studies over thresholds)
Alcohol Frequency	0	11	11 DSM (7 same report and 3 same report)
Alcohol Quantity	0	10	10 DSM (7 same report and 3 same report)
Alcohol Misuse Items	0	1	1 AUDIT
Heavy Drinking (QFI)	4	0	
HED Frequency	0	7	7 DSM (7 same report)
Alcohol Change Index (ACI)	3	0	
Binge Drinking	2	2	1 AUDIT; 1 MmMAST
Quantity-Frequency (QF)	0	3	3 DSM (3 same report)
Peak Drinking (RD)	1	0	
NIAAA Youth Alcohol Screen	0	1	1 DSM
DSM-IV-2	0	1	1 DSM

Screening Measures

Dichotomous Measures	Validation Studies (under thresholds)	Validation Studies (over thresholds)	Reference tests (for studies over thresholds)
Concern/Cut-down, Anger, Guilt, and Eye-opener (CAGE)	4	3	2 DSM; 1 NHSDA
Modified Concern/Cut-down, Anger, Guilt, and Eye-opener (CAGE)	1	0	
Concern/Cut-down, Under Influence, Guilt, and Eye-opener (CUGE)	0	2	2 DSM
Car, Relax, Alone, Forget, Friends, Trouble (CRAFFT)	0	3	3 DSM
Problem Oriented Screening Instrument for Teenagers (POSIT) - Substance Use/Abuse Scale	0	1	1 DSM
Short Michigan Alcoholism Screening Test (SMAST)	1	0	
Modified Tolerance, Worried, Eye-opener, Amnesia, K/Cut Down (TWEAK)	1	2	1 AUDIT
Remorse, Amnesia, Performance, Starter- binge, drinking at least once a month (RAPS4-QF)	0	2	2 DSM
Riding with intoxicated driver, Unable to stop, Family, friends showing concern, Trouble, need to Cut-down (RUFT-Cut)	0	2	2 DSM

Assessment Measures

Continuous Measures	Validation Studies (under thresholds)	Validation Studies (over thresholds)	Reference tests (for studies over thresholds)
Rutgers Alcohol Problem Index (RAPI)	5	2	1 DSM; 1 AUDIT
Short Rutgers Alcohol Problem Index (S-RAPI)	0	1	1 RAPI
College Alcohol Problems Scale (CAPS)	0	1	1 DSM
College Alcohol Problems Scale (CAPS): Community subscale	4	0	
College Alcohol Problems Scale (CAPS): Socio-emotional subscale	3	1	1 DSM
Young Adult Alcohol Consequences Questionnaire (YAACQ)	0	4	1 RAPI; 1 AUDIT; 1 YAAPST; 1 YAAPST-D
Brief Young Adult Alcohol Consequences Questionnaire (B-YAACQ)	2	5	2 AUDIT; 1 AUDIT-PC; 1 YAACQ; 1 RAPI
Young Adult Alcohol Problems Screening Test (YAAPST)	0	1	1 DSM
The Alcohol Problems Scale (APS)	1	1	1 AUDIT
The Academic Role Expectations and Alcohol Scale (AREAS)	0	2	1 AUDIT; 1 AUDIT-C
Leeds Dependence Questionnaire (LDQ)	0	1	1 AUDIT
The Severity of Dependence Scale (SDS)	0	1	1 AUDIT
Timeline Follow-Back (TLFB)	1	0	

Summary

- Large literature on alcohol measures validated in young people.
- Multiplicity of validation studies (on average 5) within single reports.
- Rigorous review process identified 106 validation studies above quality thresholds and worthy of quantitative analysis.
- Complex data extraction process complete, wealth of data for meta-analysis and fieldwork.

What next?

- Two contrasting literatures – volume and strength of evidence much superior for screening measures – work will involve whether other items add anything to AUDIT.
- Limited and weak evidence for assessment measures – qualitative information on item content expected to be required to augment existing items.