A new item bank for screening and assessing alcohol use and problems in young people

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Why needed?

- Expert guidance (NICE, 2010) and recent international 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)

National Institute for Health and Clinical Excellence. Alcohol-use disorders: preventing the development of hazardous and harmful drinking (public health guideline PH24). London: NICE, 2010.

Programme Aim

- To develop psychometrically validated alcohol criterion measures for young people aged 15 to 17.

- Stage 1: Systematic Review

- Stage 2: Instrument Development

- Stage 3: Instrument Testing

- Stage 4: Instrument Roll out

Stage 1: Systematic Review

- 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.

Quality Assessment

- Only studies meeting those thresholds are assessed for quality using modified:

- A QUality Assessment tool for Diagnostic Accuracy Studies (QUADAS-2).

- COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN).

For further details:

Open Access   **Protocol**

BMJ Open   A systematic review of alcohol screening and assessment measures for young people: a study protocol

Paul Toner,[1] Jan R Böhnke,[2] Jim McCambridge[1]

Screening Instruments

Screening Instruments	Reports / Studies	Average Sensitivity	Average Specificity	Average COSMIN	Average Reliability
Alcohol Frequency	3 / 18	1.00	.84	2.00 (SD = 0)	$n = 0$
Alcohol Quantity	2 / 10	.96	.91	2.00 (SD = 0)	$n = 0$
AUDIT: Items 1-10	9 / 10	.83	.70	1.94 (SD = .19)	.80 $n = 6$
AUDIT-C: Items 1-3	5 / 10	.83	.70	2.00 (SD = 0)	.92 $n = 4$

Diagnostic Benchmark

- Based on the sample of selected studies, new screening instruments should reach **a minimal sensitivity of .95 and minimal specificity of .74.**

- **Minimal sensitivity is reduced to .86** with the removal of Chung et al., 2012.

Chung T., Smith G. T., Donovan J. E., Windle M., Faden V. B., Chen C. M. et al. Drinking Frequency as a Brief Screen for Adolescent Alcohol Problems, *Pediatrics,* 2012: 129: 205-212.

Assessment Instruments

Assessment Instruments	Validation Studies (under thresholds)	Reference tests (for studies under thresholds)	Validation Studies (over thresholds)	Reference tests (for studies over thresholds)
Young Adult Alcohol Consequences Questionnaire (YAACQ)	0		4	1 RAPI; (1 AUDIT; 1 YAAPST; 1 YAAPST-D same report)
Brief Young Adult Alcohol Consequences Questionnaire (B-YAACQ)	3	1 DDQ-R; 1 TLFB; 1 YAACQ* Validated by parent instrument	4	2 AUDIT; 1 AUDIT-PC; 1 RAPI
Rutgers Alcohol Problem Index (RAPI)	5	1 DSM; 3 DDQ; 1 DDQ-R	2	1 DSM; 1 AUDIT
The Academic Role Expectations and Alcohol Scale (AREAS)	0		2	1 AUDIT; 1 AUDIT-C
The Alcohol Problems Scale (APS)	1	1 AUDIT-C	1	1 AUDIT
Alcohol Misuse Items	0		1	1 AUDIT
College Alcohol Problems Scale (CAPS)	0		1	1 DSM
Leeds Dependence Questionnaire (LDQ)	0		1	1 AUDIT
The Severity of Dependence Scale (SDS)	0		1	1 AUDIT
Young Adult Alcohol Problems Screening Test (YAAPST)	0		1	1 DSM

Assessment Benchmark

- Based on the sample of selected studies (the aggregated reliability was .81 – 95% CI 0.78, 0.83), new assessment instruments should reach **a minimal reliability of .78.**

For further details:

Drug and Alcohol Dependence
Volume 202, 1 September 2019, Pages 39-49

Alcohol screening and assessment measures for young people: A systematic review and meta-analysis of validation studies

Paul Toner [a, b] ⚲ ✉, Jan R. Böhnke [a, c] ✉, Phil Andersen [a] ✉, Jim McCambridge [a] ✉

Stage 2: Development

- Item pool - Index tests which surpassed quality thresholds in multiple validation studies were selected.

- Candidate items were extracted from these index tests with the following exceptions:

- Duplicate item content;

- Items demonstrating: low item-to-total correlations (r < .30), low factor/component loadings (h < .30), or items that have been shown to reduce scale reliability;

- Items showing differential item functioning in relation to age, gender and ethnicity;

- Level of item endorsement (above 0.9 or below 0.1) and relevance to a youth population/UK context.

Qualitative Sample

- 44 semi-structured interviews with young people aged 14-17 who drank alcohol in the last six months (26 male, 18 female, average age 16.3).

- Recruited from a range of settings e.g. Schools, Colleges, Community, Youth Offending, Pupil Referral Units, Care Hostels.

- 19 interviews focused on screening items and 25 interviews examined assessment items (had to have at least 2 drinking days in the last six months).

Content Analysis - Assessment

Drinking 2 - Set 3	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
6	✓		✓				✓	✓	✓	✓				✓	✓		✓								✓
7	✓		✓				✓	✓	✓	✓					✓		✓		✓		✓	✓			✓

6) Have you felt sick after drinking?

7) Have you thrown up after drinking?

203	205	214	217	219
Would change the question - have you thrown up while drinking - after makes it sound like the next morning	If you've thrown up, you'd have felt sick	I would keep 6 and maybe 7, they can be two separate things, but being sick in general you can throw up as well	You could combine them	You could group them together about the ill effects of drinking

Have you felt sick or thrown up from drinking?

Thematic Analysis - Assessment

"Because a lot of times people don't have expectations for other people while they're drunk. But a lot of times you have your own expectations. So I'd probably say something like have you ever surprised yourself while drunk by doing something unexpected."
(Female, 17, College)

Have you surprised yourself while drinking by doing something unexpected?

Stage 3: Testing

- Five random item order versions (14 screening items, 50 assessment items) of the pilot instrument were compared with the AUDIT as a reference standard with 277 young people aged 15 to 17.

- Total sample n=438 – 104 18 year olds, 57 diversion questionnaires.

- Performed DIF/non variance testing 15-17 v 18, whether items translate across age boundary – guided by what items work best for 15-17 year olds.

Screening Items

AUDIT ≥ 6

Item Number	AUC
2	0.65
3	0.77
4	0.79
5	0.68
6	0.78
7	0.85
8	0.87
9	0.76
10	0.77
11	0.36
12	0.73
13	0.72
14	0.85
15	0.87

AUDIT ≥ 8

Item Number	AUC
2	0.71
3	0.79
4	0.79
5	0.71
6	0.8
7	0.83
8	0.86
9	0.75
10	0.76
11	0.35
12	0.7
13	0.7
14	0.87
15	0.9

15	During the last three months, on how many days did you have six or more drinks on the same occasion?

Assessment Items

- 50 assessment items were tested. Item 75 had virtually no variance and was excluded from further analysis.

75	Have you used an app, gone to a website or called a helpline because you were concerned about your drinking?

- Factor Analysis – Item pool is dominated by a strong first dimension (eigenvalue = 26.10).

- Parallel analysis – Overall four factors explain 69% of the variance in the 49 items.

- Internal reliability of the item pool (assessment items only) based on polychoric correlations is .98 – α = .92 (corrected for 10 items).

Core Assessment Items

- *Intoxication*

Have you felt sick or thrown up from drinking?

- *Functional impairment*

Has school, college or work suffered because of drinking, a hangover, or an illness caused by drinking?

- *Acting out / Regretted behaviour*

Have you got into trouble while drinking?

Have you said or done embarrassing things when drinking?

- *Dependence*

Did the prospect of missing out on drinking make you feel anxious or annoyed?

Stage 4: Roll Out

- Selected 4 screening and 29 assessment items for the roll out instrument based on stage 3 analysis.

- Total sample n=1,023 – 202 18 year olds, 196 diversion questionnaires; 625 young people aged 15 to 17.

- Confirmatory analysis – A strong first dimension explains 52% of the variance. Good model fit CFI=.99, TLI=.99, RMSEA=.068 (90% CI: .065- .072).

- Internal reliability of the item bank – α = .95.

Screening Items

- On how many days did you drink any alcohol?
- On the days that you drank any alcohol, how many drinks did you usually have?
- On the days that you drank any alcohol, what was the highest number of drinks you had?
- **On how many days did you have six or more drinks on the same occasion?**

- PCA – strong single component explains 69% of the variance.
- α = .93 (adjusted for 10 items).

Selected Assessment Items

- Have you said or done embarrassing things when drinking?

- Did your drinking make you do something that you would not normally do?

- Have you done things when drinking that you later regretted?

- Have friends told you about things you said or did while you were drinking that you could not remember?

- Have you surprised yourself while drinking by doing something unexpected?

- EFA – one factor explains 54% of the variance.

- CFA – excellent model fit - CFI=.99, TLI=.99, RMSEA=.059 (90% CI: .056-.062).

- α = .87 (adjusted for 10 items).

Summary

- For screening have identified developmentally applicable items which are in line with the best performing existing screeners.

- For assessment have developed and validated an item bank which outperforms existing measures to assess the continuum of alcohol-related risk and harm in young people.

- Need for further validation work, for example, different practice settings, as outcome measures and cross-culturally.