

# The identification of at-risk alcohol consumption patterns: **Retrospective surveys versus a smartphone application**

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## Background

As harm from alcohol is proposed to arise largely from volume consumed and/or pattern of intake, experimental researchers have focused on hazards associated with various types of at-risk consumption, especially heavy and binge drinking.

#### **Problem: Definitions**

- Heavy and binge drinking are defined in diverse ways by both national agencies and researchers.
- There are inconsistencies and problems related to not just quantity of intake and ethanol content, but also with regard to frequency, timeframe, and time period parameters.
- There is also a lack of clarity regarding how these at-risk behaviours are distinguished from each other, a tendency to rely on dichotomous methods of differentiating between at-risk individuals and controls, and a propensity to overlook distinctions within atrisk samples.

#### **Problem: Measurement**

- Some of the problems associated with defining at-risk alcohol intake stem from limitations related to measurement.
  - Information about alcohol consumption is typically gathered using self-report retrospective summary methods, retrospective diaries or, more rarely, prospective diaries.
  - Retrospective summary methods are marked by drawbacks associated with the accuracy and/or detail of data they yield plus all retrospective instruments are subject to recall and self-report biases.
  - Survey layout plus verbal/non-verbal information communicated by researchers further influence participant responses.
  - Though prospective measures appear to better capture behaviour, they are subject to significant back-/forward-filling.

### Aim

To explore using a smartphone application (app) as a means of collecting more ecologically valid information about alcohol intake and patterns of consumption among healthy individuals.

## Method

- Alcohol Use Disorders Identification Test (AUDIT); Alcohol Stage 1 Use Questionnaire (AUQ); Timeline Followback (TLFB; 21 days); WHO Alcohol, Smoking and Substance Involvement Screening Test (ASSIST)
- Stage 2 Smartphone App: Alcohol Capture (AC); Twice daily submissions or more for 21 days

Beer (Full Strength)



generates a random ID number to

time stamped

enable datasets to be linked	••••• Telstra ? 9:03 pm 7 * 32% - • No submissions close the app		Size: 375 mL   Alcohol: 4.8%   x2
<ul> <li>Weight/Height allow BAC</li> </ul>	Settings Daily Reminders Save • No submissions enable non-		New Drink Tap to add >
calculations	Morning 08:00 am 08:00 am non-compliance		Start Time Wed 05 Oct 05:30 PM >
	Notification 2 08:00 pm		End Time Wed 05 Oct 06:00 PM >
		Common drink sizes coded into	
•••∘∘ Telstra 🗢 12:22 PM 7 🖇 85% 🔳		app to alleviate any need for Glass (200 mL)	
Capture History in 24 hours		participants to make complex Pot/Middy (285 mL)	
18/10/2015 07:45 PM		decisions about standard drinks Schooner (425 mL)	
10/10/2015		consumed Pint (570 mL)	Sun 2 Oct 3 15
18/10/2015 06:30 PM	• One notification is set to 8am; the other can be	Alcohol content automatically	Mon 3 Oct 4 30
	altered to suit the participant	generated	Tue 4 Oct 5 45 AM
Drinking history gives	• Drinking data can additionally be submitted at	Participants cannot add drin	nks Today 6 00 PM
dates/times only to reduce	8 00 pm any time	more than 24 hours in the pa	ast or Thu 6 Oct 7 15
	9 01	15 minutes into the futur	e Fri 7 Oct 8 30

identify their drink

	TLFB vs Alcohol Ca			Icohol Captu	re		
				TLFB	Alcohol Capture App		
	Participan	ts		M (SD)	M (SD)	<i>t</i> (70)	р
Healthy in	dividuals who indica	ted they drank	Drinking Days (%)	25.50 (23.59)	26.91 (21.74)	-0.84	.402
No self-repor	alcohol (N = 71); ted alcohol or substa	nce use disorders	Total Drinks	21.49 (20.00)	25.96 (25.82)	-2.12	.037
	M(SD)	95% CI	Av. Drinks/Week	7.16 (6.67)	8.65 (8.61)	-2.12	.037
Age	25.24 (10.22)	[22.82, 27.66]	Average Drinks/Day	1.03 (0.95)	1.24 (1.23)	-2.12	.037

Bir	nge Categ	ory by A	Assessment	-
	High Binge	Binge	Non-Binge	Other
AUDIT-3 (%)	_	21.13	77.46	1.41
AUQ Binge (%)	_	36.62	52.11	11.27
TLFB (%)	16.91	39.44	43.66	-
Alcohol Capture App (%)	25.35	32.39	42.25	-

Years of       15.13 (2.47)       [14.54, 15.71]       AV. Highest Drinks       6.         Education       AUDIT       8.68 (5.36)       [7.41, 9.94]       Av. Rate/Hour         AUO Di       10.62 (16.72)       [15.67, 22.50]       Highest Rate/Hour	A = II' = 1 = st D = 1 = s = c O7 (A			
Education       Av. Rate/Hour         AUDIT       8.68 (5.36)       [7.41, 9.94]       Highest Rate/Hour	54, 15.71] AV. Highest Drinks 6.07 (4.	[14.54, 15.71]	15.13 (2.47)	Years of
AUDIT       8.68 (5.36)       [7.41, 9.94]       Highest Rate/Hour	Av. Rate/Hour -			Education
Highest Rate/Hour	41, 9.94]	[7.41, 9.94]	8.68 (5.36)	AUDIT
10 (2) (1 (72)) [1 (72) (2) (7)]	Highest Rate/Hour -			
AUQ Binge 19.63 (16.73) [15.67, 23.59]	67, 23.59]	[15.67, 23.59]	19.63 (16.73)	AUQ Binge
10/10+ Drinks (%) 1.	10/10+ Drinks (%) 1.41 (3.			
ASSIST 10.97 (7.60) [9.17, 12.77]	7, 12.77]	[9.17, 12.77]	10.97 (7.60)	ASSIST
Alcohol $8/8 + \text{Drinks}(\%) 3.$	8/8 + Drinks(%) 3.22 (5.			Alcohol
<i>Note</i> . AUDIT scores $\geq 8$ indicate hazardous use; AUQ Binge	AUQ Binge	us use; AUQ Binge	$res \ge 8$ indicate hazardo	Note. AUDIT sco
scores $\geq 24$ indicate chronic binge behaviour; ASSIST $6/6 + Drinks (\%) 6.6$	SSIST $6/6 + Drinks(\%)$ $6.37(8)$	our; ASSIST	te chronic binge behavi	scores $\geq$ 24 indicates
Alcohol scores > 10 indicate moderate risk $4/4 + Drinles (0/2) = 11$	$\frac{11.47}{11}$	<u>k</u>	10 indicate moderate ris	Alcohol scores >

1.57 (0.73) -2.37 (1.46) -2.55 (5.14) -2.03 .046 3) .133 4.29 (7.51) -1.52 .830 6.57 (8.90) -0.22 6) .958 11.54 (12.33) -0.05 22)

8.16 (6.70)

-3.10

.003

Note. All drinks measured in Australia Standard Drinks; 1 Standard Drink contains 10 grams ethanol

*Note*. AUDIT-3 Binge refers to at least least weekly (but not daily) consumption of 6/6+ drinks; AUQ Binge refers to composite score considering rate of intake & drunkenness parameters; TLFB & AC High Binge refers to consuming 10/10+ drinks on one occasion or more; TLFB &Alcohol Capture Binge refers to consuming  $\geq 6$  and < 10 drinks on one occasion or more

Conclusion

**Compared with retrospective methods, AC provides more nuanced** information regarding quantity and pattern of alcohol intake.

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